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Phase I of Northern California Cooperative Research Project on Student Withdrawals (NORCAL) examined withdrawal and continuing students in 23 colleges, evaluated the data, predicted potential withdrawals, and summarized findings. A questionnaire was used to help develop a model to predict attrition within the first term of enrollment. The junior college student has been shown to be generally lower in academic ability, less committed to abstraction, and from a wider socioeconomic range. The final persistence model was to be evaluated against this complexity. Data on factors influencing withdrawal were sought among academic, environmental, and social personal items. The academic included high school record, scholastic ability, and first-year college grades. Environmental factors comprised peer pressures and social interests, and the college cultural climate. Social personal factors included age and time of entry to college, sex, socioeconomic status and degree of family support, family values as shown by occupation and education, personality traits and human relations, and such personal items as motivation, marriage plans, conflict of goals, and family attitudes. These data indicated three possible directions for Phase II of NORCAL: (I) discontinue it; (II) continue to emphasize attrition prediction, using these data combined with earlier research; (III) continue, with any of several possible new emphases. A combination of II and III seemed most likely at time of writing. (HH)

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NORCAL PROJECT

Phase I Final Report

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UNIVERSITY OF CALIF.
LOS ANGELES

JUL 23 1969

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION

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The NORCAL Study: Background

The Northern California Cooperative Research Project on Student Withdrawals (NORCAL) is in Phase I of a projected three-phase, federally and locally funded study of student withdrawals in twenty-three participating community colleges (list attached). In brief, the three phases of the project can be described as follows:

Phase I:	Identifying characteristics of the withdrawal student and the continuing student.
Phase II:	Developing, testing, and refining methods of predicting the potential withdrawal student based on those characteristics identified in Phase I.
Phase III:	Developing, testing, and experimenting with various counseling, administrative, or other educational techniques.

In Phase I, four specific steps were outlined. These steps were:

1. The compilation of data;
2. The evaluation of data;
3. The prediction of potential withdrawal students;
4. The preparation of reports and recommendations.

The study had been developed by an informal research group arising from the 1966 CJCA Summer Institute on institutional research to exchange ideas and to present proposals for cooperative research projects among community colleges in Northern California.

Prime mover for the project was Lee J. Stevens, who is now chairman of the NORCAL Research Committee overseeing the project through its current phase. Other members of the steering committee are: Virginia Murdoff, Dean of Counseling and Guidance Services, Napa College; Dr. James Keene, Director of Institutional Research, San Joaquin Delta College; Dr. Martin Olavarri, Director of Institutional Research, Diablo Valley College; and Dr. Frank Pearce, Acting Dean of Instruction, College of San Mateo. The project director employed full-time during the 1968 - 69 academic year is Thomas F. MacMillan, Napa College (on leave).

Funding for the project was made available from NDEA, VEA, CJCA, and local funding, with each participating college agreeing to share the cost of the project by contributing either $300.00 or $500.00 (depending on enrollment). The funds are administered through grants to the Foothill College District.

The specific objectives of the project in Phase I were stated in the following way in the NDEA application submitted for partial funding:

1. To determine the differences between the characteristics of junior college students who start and complete a semester and those junior college students who start, but fail to complete the semester;

2. To develop models to predict those students who have a high withdrawal potential from the characteristics developed in Phase I;

3. To develop and test appropriate procedures and techniques which will increase the number of students who complete a semester using the withdrawal population delineated by methods developed in Objective 2. (It is anticipated that this phase of the project will not be arrived at until the second year of the study.)

A number of institutional and individual student characteristics were defined as relevant for the current research (see appendices). The major instrument developed for the research was an extensive biographical questionnaire, modeled after the "Beyond High School" study questionnaire developed for use in 1959 and 1963 by the Center for Research and Development in Higher Education (vide, Beyond High School, James Trent and Leland Medsker). The questions and scales on the NORCAL instrument were developed and revised by a committee of community college teachers, counselors, deans, and directors of research, and were intended to be both current and immediately applicable to the major research problem: that of developing a predictive model of attrition within the first semester or quarter of enrollment. The complete questionnaire is included in the appendices.

Calendar Summary of Activities for 1968 - 69

A summary of the activities to this point in the project during the 1968 - 69 academic year, is presented in calendar outline below.

July 1 - August 15 Development and preparation of the questionnaire for the study. (This work was the culmination of a year of effort by a committee including the following members: Thomas MacMillan and Virginia Murdoff, Napa College; Martin Olavarri, Diablo Valley College; Frank Pearce, College of San Mateo; Lee Stevens, Foothill College; Marvin Verigge, Chabot College).

August 15 - September 15 Individual campus visits, discussion of the questionnaire, coordination of responsibilities and establishing a calendar for the study.

September 15 - November 30 Campus visits when requested. Development of a comprehensive review of the literature on attrition in higher education. Development of a conceptual model of student attrition. Development of skills in data processing (Stanford Computation Center). Identifying consultants for statistical analysis of data. Reports to the NORCAL Committee, and to participating colleges.

December 1 - February 15 Development of computer programs to summarize questionnaire data. Consultation with data processing research specialists on specific programs for analysis of data. Individual campus visits, summary reports. Development of a new funding application for NDEA.

February 15 - April 1 Experimentation with WLSQ Program (categorical regression) and AID Program (Automatic Interaction Detection).

April 1 - May 30 Development of program for discriminant scores. Preparation of final report and recommendation.

May 30 - June 30 Individual campus supplemental reports.

A Frame of Reference

Because the current study is concerned with community college students, some attention to the characteristics of these students will serve to provide a frame of reference within which the result of the study can be understood and applied.

It is, perhaps, a truism in higher education that diversity characterizes the field best. Following the germinal study by Learned and Wood (1938), other authors have verified the extent of diversity in the ability of college students, and of the institutions themselves. A study by Darley (1962) at the Center for the Study of Higher Education reported that, of those who enter college, "25 to 30 per cent are drawn from the bottom half of high school graduating classes; conversely, 40 to 50 per cent of those in the top quarter of their graduating classes do not go on to college." (Darley, p. 9). In the Darley study, test scores on the ACE Psychological Examination were compared for entering freshmen in 200 institutions, with the result that "The lowest had a mean score of 37.5, and the highest of 142." (Darley, p. 25). For a specific comparison of Darley's data with junior college samples, consider the evidence offered by Leland Medsker (1960), Hoyt and Munday (1966) and K. Patricia Cross (1968).

In the Medsker study, among transfer and terminal students in thirteen California community colleges, the mean ACE score was 93, with transfer men achieving 97 and terminal men in the technical subjects achieving 81 (Medsker, p. 34). In general, these findings seem to suggest that the California sample students compare in academic aptitude to their four-year college counterparts. A more recent analysis of academic potential among community college students was made by Donald P. Hoyt and Leo Munday (1966). Using ACT composite scores for students in eighty-five two-year colleges. The ACT report concludes that "in overall academic potential, junior college students in this study average about one-half a standard deviation below four-year college freshmen; the average junior college freshmen would rank at about the 30th percentile of the four-year group." (Hoyt and Munday, p. 14).

K. Patricia Cross (1968) concluded, on the basis of Project Talent figures for 400,000 students who pursued different career and education patterns after high school, that "on every one of 14 measures of ability - ranging from reading comprehension, mathematics ability, and biology to vocabulary information, creativity, and abstract reasoning - the junior college student group fell between four-year college and non-college groups." (Cross, p. 11).

To complete the picture, research by Tillery (1963) has shown that high ability, university eligible students who elect to attend a community college show less "intellectual predisposition" as measured by the Omnibus Personality Inventory than their peers who enter the university directly. Again, as with measures of academic aptitude, community college students "showed less interest in the intellectual attitudessampled by the scale than senior college students, and more interest than is evident among those who did not attend college." (Cross, p. 29). Regardless of ability, then, it would seem that community college students may have less commitment to ideas, and less theoretical orientation than others in higher education.

In a study of the community college, Burton Clark (1960) noted in particular the influence of a "large, undifferentiated aggregation of potential clients or students." (Clark, p. 147). Reflecting on the potential of an unselective admissions, open door policy, Clark noted:

> For San Jose and the State as a whole, these student prerogatives mean that the public junior college has non-selected student bodies, the individual student being entitled to an unrestricted choice of programs within the wide limits of a comprehensive school. In effect, the student constituency of a junior college is entitled to determine what the college will emphasize. (Clark, p. 165)

The data provided by Medsker and Trent (1967) add some dimension to the Clark study. Both ability and socio-economic status were found to be related to college attendance, but, under controlled conditions, "social status was found to have more bearing on college attendance than academic ability." (Medsker and Trent, p. 26). Cross (1968) specified family income, father's occupation, and educational level for father among public two-year college students in the Medsker-Trent (1965) and ACE (Astin, et.al., 1967) studies: 42% reported family income of $10,000 or more; 29% reported father attended college; 16% reported fathers to be professional or managerial. More recently, College Entrance Examination Board (1968) figures on comparable data for another sample were as follows: 28% reported $10,000 or more family income; 12% professional or managerial fathers; 26% fathers attended college.

The importance of the information on socio-economic status among community college students is that it provides a touchstone for considering other characteristics of community college students. For example, Rosen (1956) has shown that a difference exists in need-Achievement among social classes, and that there is a positive relation between measures of need-Achievement, Achievement Motivation, school grades and college aspiration. Further, Lamar T. Empey (1959) has shown that occupational aspiration differs among social classes, both on absolute and on relative measurement (Empey, pp. 708 - 9). The important point to be made here is this: that the lower social strata, and from the lower ability levels will have an impact on the environment of the community college.

Again, Cross (1968) provided some evidence to illustrate the point. Citing the ACT and ACE studies, Cross listed the following figures on educational aspiration among junior college, four-year college, and university students: JC (ACT) less than B.A., 27%; B.A., 45%; more than B.A., 24%. These contrast with four-year (ACT): less than B.A., 15%; B.A., 51%; beyond B.A., 31%. And with university (ACT): less than B.A., 9%; B.A., 47%; beyond B.A., 41% (Cross, p. 41). The ACE figures show the same general trend, verifying to some small degree the assertion that junior college students have lower educational and occupational aspirations than others in higher education.

MacMillan (1967) compared the performance of sixty-one community college students with a sample of 3,778 college students who had taken the Allport-Vernon-Lindzey Study of Values (1960). Regardless of Ability, the community college students had a pattern of lower Theoretical, Aesthetic and Political scale scores and higher Economic, Social, and Religions scale scores than the college sample cited by Allport-Vernon and Lindzey. While not all of the differences were statistically significant at the .05 level, the pattern again suggests a difference in the orientation of community college students in the sample, and hence a difference in the community college peer environment, compared with others in higher education.

The composite picture of the community college student reveals a pattern of generally lower academic aptitude, generally less strong commitment to ideas, and generally greater diversity of socio-economic status than would be represented in the four-year college or university. The influence of these characteristics of students on the institution have been stressed by Hoyt and Munday:

> While diversity among junior colleges was considerable, diversity within colleges was even more noteworthy. This study provided empirical support to the commonly held belief that junior colleges must contend with the entire range of academic talent --- from the most gifted to the student of borderline intelligence. To provide academic programs which are appropriately stimulating to students of all academic levels is an immense challenge. (Hoyt and Munday, p. 15)

If one were to consider the additional diversity of socio-economic status, values and occupational aspiration, the picture becomes even more complex. It is against the complexity of the community college environment that the following model of persistence must ultimately be evaluated.

Drop-outs: A Review of the Literature

The literature on the college "drop-out" is indeed vast and confusing. Studies of rates of attrition in higher education range from the most common accounting procedures indicated by numbers of entering freshmen who fail to complete baccalaureate degrees within a specified period to intensive psychiatrict interviews and individual case studies. Among other weaknesses in the literature, there is no common ground for determining which students are to be labeled "drop-outs" and which are not, a fact which led Dorothy Knoell (1960) to suggest that perhaps the term has become useless, and to insist on more limited and specific designs for research on attrition behavior among college students. Since the appearance of Summerskill's comprehensive review of research on the college "drop-out" in The American College (1962), a number of investigators have made significant contributions to the literature, particularly in the direction suggested by Knoell. Of these, the applications of discriminant function analysis by Vorreyer (1963) and Rose (1966), and the significant limitation by Rose to those students who fail to complete their initial semester in college ("defaulters"), are perhaps among the most promising directions for current research.

As a preliminary to this review of the existing research in the field, Knoell's (1964) Framework for New Research on Attrition, which lists six assertions for the new direction of such research may provide a valuable model against which the reviewed research may be evaluated. Knoell offers the following:

> 1. Individual and institutional attrition are both a function of the interaction of student imput (ability, interests, age, sex, motivation), the curriculum, methods of instruction, grading and retention standards, intellectual and other "climates", student personnel services, activities, and, finally, outside impinging forces (family, national crises, accidents).
>
> 2. While some characteristics of entering students are fixed (or static), others can and should change as a consequence of education and/or maturation.
>
> 3. High school graduates enter college with a vast range of goals, aspirations, motivations, and values. Attrition is to be expected among students with each type of motivation (or without any), but for different reasons.
>
> 4. Both the causes and the results of attrition on the part of students are usually multiple, although a single incident may serve as a trigger for the dropout action.
>
> 5. The decision to withdraw or persist is not always in the province of the students who are dropouts. Perhaps no more than half of the dropouts have freedom of choice.
>
> 6. Distinctions must be made among students who interrupt their education, those who terminate it, and those who transfer to other institutions. (1964, pp. 8 - 12)

The focus of the current study is on the attempt to identify the characteristics of students who are most likely to withdraw during their initial enrollment period (semester, term or quarter). Thus the purpose of the review is to begin to develop, even at the most intuitive level, a kind of composite picture of the student who withdraws from higher education, and thus to derive some basis for selecting research methods and instruments for current and continuing research that will be most appropriate to the task.

The current study is further limited to those students enrolled in Public Community Colleges, a fact of no small significance in light of so much evidence that such students may not easily be compared with their counterparts in large public universities, or in small liberal arts colleges. Recent evidence for this is found in Cross (1968), who noted, for example, that on fourteen of seventeen measures of academic aptitude and achievement, junior college students fell between their four-year college peers and the non-attenders. Ample evidence also exists to verify the variety of aspirations and needs of community college students. One need only recall Clark's (1960) conclusion that the community college reflects the entire range of the social, economic and interest spectra within the community it serves to be reminded of this.

The task, then, is at once complex and clear: it is to draw from existing knowledge some clues toward the development of a composite picture of the student who withdraws from the community college during his initial enrollment period, selecting those factors which seem most relevant from the literature on student attrition, both in the secondary schools and in higher education. For the sake of order, the research will be considered under the following headings: 1) Academic Factors, 2) Personal-Social Factors, and 3) Environmental Factors.

1. Academic Factors

a. High School Performance

Summerskill (1962) indicated in his comprehensive review of the literature that high school rank was associated with attrition in ten of the eleven studies he considered. Earlier, Iffert (1957) had gone as far as to point out that the attrition rate could have been cut from 61.2% to 43.9% if admissions to the colleges and universities in his study had been restricted to the top fifth of the high school graduating classes. Gadzella and Bentall (1967) considered five related factors in a follow-up study of over 200 high school students in Portland, Oregon who went on to four-year institutions: the single factor associated with attrition was the high school G. P. A. In a much earlier study of high school students, Gragg (1949) determined that patterns of failure in school subjects, school retardation (retention), performance in the lowest decile of ability on high school tests, and low reading performance scores were among ten factors differentiating high school drop-outs from graduates. The picture is to be taken with reservations for the current study: none of the literature reviewed by Summerskill, and none of the findings by Iffert are based on research in community colleges. That attrition in selective four-year institutions is associated with high school performance is perhaps a truism, but whether the case is the same in community colleges remains open to question. Similarly, the findings from studies of high school drop-outs may not be applicable on this dimension since it may be unlikely that those who withdraw from high school with the pattern indicated in Gragg's report will enter the public community college, or, in fact, any form of higher education. What seems to be called for is a method of controlling for high school performance to investigate whether those with a high academic record in high school withdraw in different proportion to those with low academic performance.

b. Scholastic Aptitude

The case with scholastic aptitude is virtually the same as with high school performance. Again, Summerskill (1962) has indicated in depth that sixteen of nineteen investigations verified lower average scholastic aptitude scores for drop-outs than for graduates. An extremely comprehensive study recently published by Trent and Medsker (1967) contains some evidence that attrition is related to scholastic aptitude, but also shows that "the largest proportion of withdrawals was at the high level of ability." (1967, p. 125). The authors conclude:

> If attrition could be accounted for solely on the basis of lack of ability, then a solution might lie in identifying those college aspirants clearly incapable of college work, and finding other means to foster their self-development. But data from the present sample and elsewhere consistently indicate that academic aptitude, as such, does not account for most of the withdrawals from college, and the same may be said for financial status. (1967, pp. 118 - 19)

c. College Grades

In the 35 studies reviewed by Summerskill (1962), it was discovered that poor or failing grades at the beginning of a college career are highly predictive of drop-outs. Approximately one third of all drop-outs do so for academic reasons, and the pattern is clearly established by the end of the first year of college. A number of sources lend credence to this finding. Trent and Medsker (1967), noted that, while 83% of all students who entered college completed their first year, 49% of the withdrawals first left college before their second year of studies: in other words, while only 17% withdrew during the year, and additional 32% failed to return after that first year. (1967, p. 94). In Vorreyer's (1963) study, the correlation of .61

between high school grade point average and first semester college grades of Rocky Mountain College freshmen suggests that it may be possible to identify potentially low achieving college students during the critical first enrollment period, and thus to intervene in the pattern which may lead to attrition.

Again, what seems to be called for is a method of controlling for ability or potential, as measured by high school performance and scholastic aptitude tests. If subsequent analysis suggests no significant differences in the proportions of withdrawing students at varying levels of ability in community colleges, then perhaps other factors can be considered more confidently.

2. Personal-Social Factors

a. Age

Studies of age and attrition have a long history in the literature. Cooper (1928) found that older students are less likely to graduate than younger ones, a finding verified by Pope in a later study (1931). In more recent years, Thompson (1952), Summerskill and Darling (1955), Gable (1957) and Suddarth (1957) found no differences among younger and older students on the rate of attrition. Farnsworth, et. al., studied a group of early-admittance students and discovered that these younger students in higher education persist just as well as their older colleagues. Summerskill (1962) concludes that "age per se does not affect attrition although older undergraduates may encounter more obstacles to graduation." (1962, p. 631). Findings by Trent and Medsker (1967) lend some dimension to the literature on age and attrition. They found that only 6% of all students in their sample who attended college entered at an unconventional time (i.e., other than the Fall immediately succeeding their graduation from high school). Of these, 65% were no longer in school four years later. Although age itself may not indicate possible patterns of attendance, time of entry to college, a related factor, may be quite important.

b. Sex

According to Summerskill (1962), the most recent national survey found attrition rates of 61% for college men and 59% for college women, a difference that is probably not significant. He points out that studies over the years have either indicated that the difference between the sexes on attrition is negligible, or that women tend to persist better than men in certain college settings. Iffert (1957) cautions that, although rates of attrition may be nearly equivalent, the reasons for attrition are virtually certain not to be.

c. Socio-Economic Status

As in the case of ability, the picture is somewhat clouded on the association of SES with persistence. Ample evidence exists to verify an association between patterns of college entry and SES, but, as Trent and Medsker have stated, "apparently SES is more associated with entering college than with remaining there." (1967, p. 183). Similarly, studies have shown the association between over-achievement and SES (Pearlman, 1952), and between father's occupational and educational level and college attendance (Medsker and Trent, 1965). Suddarth (1957) and Summerskill and Darling (1955) have shown that more drop-outs occur among students whose fathers were in skilled, semi-skilled, or service occupations.

Summerskill (1962) asserted that perhaps more important than the standard measure of SES that may be used to control for this factor in studies of attrition are those factors that relate to the values of the family, the parental encouragement and expectation level, and pressures from peers within the home environment and the prior school setting of the student. Although the latter will be considered below, perhaps the best illustration of a carefully controlled and comprehensive study of the influence of the total home and community environment on the persistence of students is that which was reported by Bullock (1961) from his study of male Negro boys in a Texas high school. The significant factors associated with attrition in this study were: 1) school record, 2) home and community status, 3) parental involvement in the child's school career, and 4) personal and social relationships. Illustrative of the enormous impact of parental attitudes is the fact that 100% of the responding drop-outs reported that they thought "Mother doesn't care" whether I stay in school, as opposed to 0% of the stay-ins; 93.5% of the responding drop-outs thought "Father doesn't care" about my schooling, as opposed to 6.5% of the stay-ins. Perhaps most conclusive is the fact that Bullock interviewed the parents of the respondents, and discovered that the students' reports of their parents' attitudes were accurate.

d. Family Values

Other studies have suggested that the family environment is perhaps more important than the occupation of the parents or their level of education. Slocum (1956), Sexton (1965), and Levinson (1965) have found evidence of this, and the Trent and Medsker (1967) data perhaps lend the most recent weight to such an interpretation. The conclusion of Trent and Medsker was:

> It seems evident that as a group the young adults who persisted in college came from different family climates than did the non-attenders and withdrawals. Nearly 70 per cent of the high school seniors who became college persisters reported while still in high school that their parents definitely wanted them to attend college, compared with less than 50 per cent of the withdrawals and less than 10 per cent of the non-attenders. (1967, pp. 275 - 76)

The Trent and Medsker data also include student perceptions of their parents' temperaments, and reports of the amount of encouragement for college given by the parents, as well as an assessment of the likelihood that college problems and plans would be discussed in the home. All of these questions yielded significant differences among persisters, withdrawals, and non-attenders.

These studies emerge as even more relevant in the context of the present study of community college students. Given a pattern in which a student is most likely to attend a two-year college in his own home town, surrounded by many of the same peer and family pressures he has experienced throughout his schooling, and remaining at least partially dependent on his own immediate family for emotional and financial support, any contrast between the values of the institution and the values of the family is likely to be the basis of the decision to withdraw from college.

e. Personality Factors - Standardized Instruments

A number of studies have been used to assess differences in the personalities of persisting and withdrawing students. Among the instruments used are the Bell Adjustment Inventory (Fischer, 1943; Griffiths, 1945; Cook, 1956; Williams, 1966), the MMPI (Palubinskas, 1952; Grace, 1957; Wright, 1967), The Minnesota Counseling Inventory (Brown, 1960) need scales derived from the Adjective Check List (Heilbrun, 1965), the Gordon Personal Profile (Daniel, 1963), and the Omnibus Personality Inventory (Rose, 1965; Suczek and Alfert, 1966). The results of the studies vary, as does the sophistication of the research design among the studies. The studies reporting the Bell are evenly divided, with two reporting significant differences and two reporting none between persisters and drop-outs. Cook (1956) in a study of high school drop-outs combined the Bell with the SRA Youth Inventory and found significant differences on scales related to Home Adjustment, Home and Family, My School, and Health. Wright's (1967) study involved use of the MMPI in conjunction with a 26 item Personal Rating Scale designed for use at the University of Florida. Students reporting higher stress over issues related to "loneliness, nervousness, physical appearance, girl-friends, mother, father, other relatives, body regularity, stomach problems, people I depend on, transportation, self-care, worrying, and sleeping" were also found to have higher maladjustment measures on the MMPI. Wright concluded: "These data give credence to the idea that valid information regarding maladjustment can be obtained by going directly to the student's consciously perceived sources of stress." (1967, p. 373). This is indeed an important finding, since it suggests the possibility of using a biographical data sheet containing items that have been shown to differentiate among persisters and drop-outs, as, for example five of the items in Wright's own study did at the .001 level.

Brown (1960) studied the differences in performance on the Minnesota Counseling Inventory among women enrolled in a private Catholic college. Significant items included those related to Family Relationships, Social Relationships, Mood, and the Reality scale. Heilbrun's (1965) study was more complex in design, and included controls both for ability and for sex. Among lower ability students, drop-outs showed less need for Deference, as measured by the Adjective Check List Needs Scales, while high ability students showed a greater need for Exhibition, Change, and Autonomy among drop-outs than persisters. Consistent with this finding is that of Suczek and Alfert (1966), using the Omnibus Personality Inventory. On a sample of University of California students who withdrew in good standing, the authors concluded that the drop-outs were "significantly more intellectually oriented, autonomous, complex, open to ambiguity and innovative." (1966, p. 12). However, the same study reported that the least autonomous and intellectually oriented students were drop-outs who were failing at the time of attrition.

The studies using standardized instruments to assess personality variables associated with attrition need to be considered carefully in light of the variety of instruments used, and the degree of complexity of the research design. The most significant use of such instruments may be only under those conditions when ability, sex, socio-economic status, and type of attrition (in good standing vs. academic dismissal or suspension) are controlled. It may also be the case that information derived from biographical data sheets developed for each individual institution may be as meaningful under controlled conditions as the more widely known research instruments.

f. Personal Needs - Biographical Data and Exit Interviews

Perhaps the most massive attempt to describe reasons for student attrition was that attempted by Iffert (1957) of over 1,400 students who discontinued their education. While one needs to consider Iffert's findings with some caution because there may be no genuine association between the withdrawal and the outcome of the withdrawal from college, nor between the stated reason and the actual reason for dropping out, the findings nonetheless seem to have verified those of others and may provide meaningful clues. As Summerskill (1962) summarizes the Iffert study, 48% of the men reported they lacked interest in their studies, 45% enlisted in the military service (Korean Wartime). Among women, 49% reported marriage plans, while 33% lacked interest in their studies. Personal finances ranked third in importance as a reason for leaving college both among men and among women. Seven per cent of male discontinuances and 10% of female discontinuances were attributed by the students to medical factors.

The more recent study by Trent and Medsker (1967) was designed in such a way that an enormous amount of personal information was gathered for over 10,000 students while they were still in high school, and then their subsequent patterns of college attendance and attrition were followed. Motivation was assessed in the biographical data sheet in a variety of ways: students were asked to rate the importance of college for men, for women, and for themselves, personally; they were asked to rate the importance of several functions of education; they were asked to anticipate the reason for their withdrawal, if it became necessary, and, as indicated earlier, they were asked about the support of their parents and the level of expectation set for them in their own homes. On every variable drop-outs could be distinguished from persisters: college was more important to persisters than to withdrawals; more drop-outs than persisters saw education to be vocational in function rather than contributing to the personal growth of the individuals; a greater proportion of persisters than drop-outs saw finances to be a major stumbling block, perhaps a suprising finding, but indicating that there may be a difference in the anxiety over the investment in higher education among persisters. It is difficult to interpret this finding in light of the fact that 16 of 21 studies reviewed by Summerskill (1962) had finances rated as one of the top three reasons for withdrawal. It may be the case that too much emphasis has been placed on finances, at the expense of more thorough studies of motivation and personality.

Only one study (Samenow, 1967) goes into the kind of extensive clinical detail that may ultimately be required for the building of a general theory of attrition among college students. Through intensive case studies of three students, two of whom Samenow characterized as "alienated" and one as "psychotic", one begins to see in vivid detail the kinds of family interaction patterns that have operated in the individual cases to create conflict between academic and personal or family goals.

What seems to emerge among studies using interview of biographical data, either at the time of admission or at the time of exit interview, is that those factors associated with motivation and family support (emotional and financial) may be of value in the development of a composite picture of the drop-out. Robert G. Cope (1966) has suggested that several different themes for items on such biographical data sheets may be of some importance: opinions, expectations, attitudes and beliefs about achievement vs. security orientation, self-reliance, seriousness of purpose, willingness to postpone gratification, individualism and the value of work, optimism, an orientation to the future, and an attitude of doing rather than remaining passive, according to the author, may pay off. In light of Wright's (1967) finding, such instruments may pay off as well as the standardized ones.

3. Environmental Factors

a. Peer Pressures

An often ignored source of pressure on the college student is the peer group with which he identifies on the college campus. Simpson (1962) concluded that parents and peers together form the greatest influence on the aspirations of middle and working class boys. Early papers by Murphy (1947) led to further evaluation of the needs-press theory with special reference to the student subcultures on the college campus (Trow and Clark, 1954; Clark, 1963). Newcomb (1962) and Bushnell (1962) developed the applications, and a recent book by Newcomb and Wilson (1966) has drawn together much current research on the matter of peer-group pressures.

Spaulding (1966) assessed the relative attachment of students for a variety of groups, individuals, and organizations. In order of their importance of attachment, here are the top ten:

conjugal family, steady or fiancee, parental family, best friend, fraternity or sorority subgroup, athletic team, the United States, College fraternity or sorority, clique, church group on campus (1966, p. 427). Again, the pattern of attachment places family at the top, but loyality to family and friend above loyalty to nation. The important thing is that for students on a public university campus, peer pressure may operate to reinforce persistence or stimulate withdrawal.

In this area, one of the few community college studies appears. Armand Mauss (1965) developed scales for assessing the attachment of community college students to various campus subcultures. If this dimension could be better assessed, or more extensively evaluated, perhaps more meaningful studies of attrition could be made, although the design would become so complex as to be cumbersome. Under such a design, however, much better and more specific questions might be asked about potential and actual drop-outs. Slater (1957) suggested the usefulness of a similar complex design to test a variety of hypotheses:

> 1) the affinity of specific groups for given curricula, including the bases for such affinity; 2) the relationship between father's occupation and son's academic orientation, including the nature of the relationship, its source, duration, etc.; 3) the influence of (1) and (2) upon performance and attrition among male college students; 4) the likelihood of transfer to another college after a student has withdrawn from the college which he originally entered; 5) the structuring and restructuring of student perception of curricular offerings, including the conditions which influence the process, differences between students whose perception is altered and those whose perception remains relatively unchanged, etc. (1957, p. 440)

b. The College Environment

With the research by Stern (1962), Pace and Stern (1958) and the development of the College and University Environment Scales, now being revised for community college use, greater attention has been given to the assessment of the college as a culture. Pace (1963) wrote:

> To the extent that a college environment is a unrelated assortment of policies and practices and events and features, its influence upon the student is probably small, whereas to the extent that it is a culture...its influence upon the student is probably large. (1963, p. 66)

Particularly is the environment of the college an important factor if the patterns of reinforcement from the college, and its assortment of peer cultures, are in direct conflict with the patterns of family reinforcement of student experiences. Williams (1967) has stated the case most clearly:

> Viewed as a product of the reinforcement he has received, the drop-out can be described as conflicted. He is pulled in opposite directions by the reinforcement of opposing modes of behavior. The potential drop-out is likely, therefore, to perform some actions oriented toward the goal of seeking a college degree and some directed away from such a goal. (1967, p. 383)

Although perhaps the most subtle of all levels of research on the college drop-out these environmental and peer pressures may be at once the most fruitful for investigation. If what is called for is the manipulation of the student's environment to facilitate changes in behavior or resolution of conflict, then knowledge about that environment seems to be the basis for any further study. At this time, the CUES instruments are not available for community colleges, but perhaps with their publication additional and promising research can be developed.

Concluding Remarks

The problem of attrition in community colleges is the central concern of this study. On the larger front, the picture of student persistence and success in college is relatively unchanged over the past several decades, with the most recent figures (Trent and Medsker, 1967) indicating that nearly half of the students entering all forms of higher education in 1959 had withdrawn before June, 1963, and 23% remained in college four years without obtaining their degree, leaving 28% who received degrees on schedule (1967, pp. 90 - 1). Among community colleges, the same study reported that 67% were no longer in college after four years, while only 11% obtained bachelor's degrees. A number of studies have suggested that one need only be optimistic, for students will eventually finish (Jex and Merrill, 1962; Ecklund, 1964), but there is some question whether these findings apply with equal confidence to community college students. Despite the tendency to "stretch out" (Demos, 1961) one's education, or to interrupt it to engage in meaningful action (Koell, 1964), the nagging conclusion is that there is unnecessary academic waste among those who could reasonably complete an associate in arts degree in a community college but fail to complete their crucial initial enrollment period.

It is clear from the review of the research that little has been done in community colleges, or that little has been done to be reported in the literature. The factors of age, sex, socioeconomic status, ability, it has been noted, deserve to be controlled in research on attrition, but will probably not yield very promising results if they are used as predictors in themselves. What seems to emerge more clearly is that considerations of family attitude and values, expectations of students, patterns of affiliation and reinforcement, and qualities of the college environment need much more thoughtful investigation in the development of a model for understanding community college attrition. The direction seems to call for an instrument following the line suggested by Cope, assessing opinions, expectations, attitudes, and beliefs, under conditions controlled for such factors as age, sex, ability level, and perhaps some dimensions of personality measured by standardized instruments. The attention needs to be on how the student perceives himself, and the pressures he experiences from the environments represented by college, peers, and family. The direction needs to be toward greater awareness of those factors which are in the power of colleges to manipulate, and the mode must be experimental.

Phase I Methodology

The central problem of Phase I in the NORCAL project was to identify those student characteristics that were most clearly associated with attrition among entering freshman day students in the participating colleges, on the basis of which a predictive model could be developed for predicting individual attrition. A number of assumptions were made as the instrument was developed to assess student attitudes, opinions, and beliefs: 1) that the characteristics of students who complete their initial semester of enrollment in the community college are different from the characteristics of those who withdraw during that initial enrollment period; 2) that among these differences, measures of opinion, attitude, and belief about life goals, educational and occupational expectations, patterns of family interaction, and self-concept would have value in a predictive model of individual behavior; 3) that the characteristics of entering freshman students are stable enough to allow for the generalization of a predictive model of attrition to an independent sample of community college students in the Fall, 1969 enrollment period and subsequently.

The thrust of the NORCAL project was basically one of investigating the impact of patterns of opinion, attitude and belief on persistence in the community college. Secondarily, institutional comparisons were planned to assess as fully as data would allow the differing impacts of the various community college environments, ranging from rural to metropolitan, and including a great diversity of campus characteristics. The design was conceived primarily to develop the most replicable model of student persistence behavior, regardless of the institutional setting.

Three specific steps were taken to implement the purposes of Phase I. They were:

1. Analysis of the NORCAL questionnaire items to identify those individual responses which were non-randomly distributed among community college withdrawals and persisters.
2. Multiple regression analysis of the most potent predictors to derive individual weights for the categorical responses to each item in the instrument that seemed to be associated with persistence status.
3. Development of discriminant scores, using the weights derived in Step 2, and analysis of the distributions of discriminant scores among students who withdrew and a randomly drawn sample of persisters in each participating college.

For the initial step, Pearson's Chi-square test of independence was used, with the acceptable level of significance set at .05. In all, 1,436 students who withdrew during their initial attendance period were compared with 1,436 randomly selected persisters from each institution to create a sample of equal size, and to provide the basis for comparison among persisters and withdrawals.

The second step of the analysis required the use of a categorical regression program to weight the responses to each question. Such a categorical regression program was developed by Alan B. Wilson at the Survey Research Center, University of California, Berkeley. Wilson summarized his procedure as follows:

> Regression analysis may be readily extended to include nominal categorization by assigning the 'dummy' value of one if an individual belongs to a particular category, and zero if he does not....A regression coefficient is estimated for each category of the nominal variable, with the constraint that their weighted sum shall be zero. (Wilson, 1966, p. 115)

Output from the WLSQ program included the multiple correlation coefficient R, the multiple correlation coefficient squared (a measure of the amount of variance in the dependent variable accounted for by the set of independent variables), partial correlations of each variable with the dependent variable, and both dependent variable unit weights and "normalized" beta weights, calculated on the assumption of a mean of zero and a standard deviation of one in the dependent variable.

The third step was to develop discriminant scores for each individual in the drop-out sample for comparison with the discriminant scores among the randomly selected persisters. The most direct approach to the discriminant analysis was suggested by McNemar (1962), who noted that "we may compute the weighted scores for all N cases and then make distributions for the two groups separately in order to scrutinize the amount of differentiation (or overlap) present" (1962, p. 206).

The three steps in the execution of the Phase I objectives were selected in order to provide maximum information at each step, while at the same time allowing that information to be most easily interpreted by the participating institutions for implementation in Phase II. It was felt that the Chi-square tests of independence would present the data in tabular form to accomplish the greatest ease of interpretation while at the same time, because of the additive properties of the Chi-square statistic, would allow for the combining of a series of individual questions in a Likert-type scale. Thus both individual and accumulated impact of the NORCAL questions could be analyzed most completely. It was also felt that the use of regression weights could be sufficiently clarified and interpreted to make the prediction of individual attrition possible at the counseling office level in each of the participating colleges.

Inter-institutional comparisons were made to evaluate the impact of "environmental press" among the colleges on the rate of attrition in each of the participating institutions. The attrition rate ranged from less than five per cent to more than thirty per cent, providing an adequate basis for comparison and ranking. The statistic used in this adjunctive phase of the study was the Spearman Rank-Difference correlation coefficient. Each institution was ranked on attrition rate and a number of other variables, and Rho was calculated between attrition rate and each of the other variables. The findings tended to strengthen the notion that environmental differences have a heavy impact on attrition rates in community colleges, and at the same time added in no small way to the findings on individual characteristics associated with attrition: generally, where individual characteristics associated with attrition were prevalent in an institution, the rate of attrition was found to be higher. While perhaps obvious, the results of the inter-institutional comparison also had the value of providing some significant clues to the most productive approaches in counseling, administration, and curriculum that may be tested experimentally in Phases II and III of the NORCAL project.

Findings: Student Characteristics

A. Which Variables Differentiate Persisters From Drop-outs

The biographical questionnaire was administered to more than 28,000 individual students entering twenty-three community colleges in Northern California. There were 112 items on the questionnaire, arranged to allow for individual scoring, or, in some cases, as Likert-type scales measuring such factors as "Worry" "Self-Concept" and "Encouragement for College", among others.

As a first step in the analysis, individual Chi-square tables were developed to show the distribution of responses among 1,436 drop-outs and 1,436 randomly selected persisters in the twenty-three colleges. A number of items showed significant variations in the distribution of responses for the two groups, and were identified as potential items for discriminant analysis. In general, the findings tend to verify previous research, but with the additional advantage of creating a composite picture of the potential drop-out through the use of a rather diverse instrument. The findings may be grouped under several headings: 1) Demographic Characteristics - age, sex, race, marital status; 2) Affluence - family and individual financial support for college; 3) Dependence - the expression of attitudes reflecting willingness to turn to others for school and occupational advice; 4) Family Encouragement and Value Patterns - the expression of attitudes related to parental encouragement for college, and to family interaction patterns; 5) Anxiety - the expression of attitudes reflecting concern about school-related problems, personal problems, and social problems; 6) Goals - the expression of preference for various occupational and educational options offered by the community college; 7) Values - the expression of attitudes reflecting a preference for academic versus social activities, and the expression of attitudes reflecting the importance of college to the individual; 8) Self-Concept - the expression of attitudes about the self which reflect confidence, emotional stability, and academic orientation.

Under each heading, the items from the questionnaire which showed a significant difference in the distribution of responses for the two groups will be presented and discussed.

1. Demographic Characteristics

Tables 1 and 2 present the distribution of responses for the variables "Race" and "Martial Status". Neither age nor sex differentiated persisters from drop-outs in the NORCAL sample. It is likely that the homogeneity of the group on the "age" variable made it unlikely that differences due to age would be reflected. Similarly, although there was a difference in the proportion of men and women completing the questionnaire in the twenty-three colleges, this difference was not associated with attrition.

In Table 1, the Racial distribution for the samples is shown. Although little difference seems to exist among "Caucasian" and "Other" students, the distribution of responses is significantly different among Negro and Oriental students: clearly, Negro students are more attrition prone, and Oriental students are less so in the current sample.

Table 2 presents the distribution of students by marriage and persistence status. Although significant, the marriage variable may have limited application for prediction, since the majority of entering freshmen do not fall in the categories of "married", or "divorced or separated". A number of surveys reflect the fact that married or divorced women entering college later than the usual freshman may be more likely to withdraw, primarily for financial reasons. Again, the value of this finding for predicting attrition among entering freshmen may be limited.

2. Affluence

Several questions in the instrument were intended to measure the student's perceptions of his individual and family affluence. In sequence, these questions (or items in Likert-type scales) were:

> If employed, will you keep your job? (Table 3)
>
> Is the job related to your college program? (Table 4)
>
> Will you need financial aid to remain in college? (Table 5)
>
> What type of job was held by the head of the household in which you grew up? (Table 6)
>
> Which of the following describes your family's financial situation? (Table 7)
>
> How much do you worry about: finances and debts (Table 8), working while in school (Table 9), finding a job while in college (Table 10), car payments (Table 11).

With the exception of "family financial situation", every variable in the above list suggested a difference in the responses of drop-outs in the direction of greater concern over money, and in the direction of less affluence than the persister.

Of some worth is the evidence which suggests that, although a greater number of drop-outs expected to keep their jobs while in college (and worried more about it), fewer drop-outs had jobs related to the programs for which they were registered. One is tempted to speculate what the effect might be of providing employment directly related to the college goal throughout the college experience, through expanded and individually-suited work-study programs.

The evidence in Table 6 is difficult to interpret. Although the Chi-square value is statistically significant, not much can be made of this measure of socio-economic status as a predictor of attrition: the differences in the distribution of responses never vary over about three per cent, and then only in the middle and upper levels of jobs. It appears that low socio-economic status (as measured by the student's report of the father's job type) is not related to attrition; and it is further evident that prediction from this variable to attrition might be of little value. Further evidence of this point of view is found in the fact that the student's perception of his family financial status failed to differentiate the persister from the drop-out: the two variables are statistically independent.

Tables 8 through 11 are constructed from responses to items in the "Worry" scale (How much do you worry about....?). It appears that, in addition to indicating more likelihood of maintaining part-time jobs, drop-outs also express more concern over problems of finances and debts: they work more, and worry more about it. One is tempted to speculate whether this series of responses also indicates less preference for delaying gratification among drop-outs: given an opportunity to make an immediate gain through employment, is it likely that the drop-out would choose to stay in school or take the job? The glib response seems to be that he would take the job. Recommendations to deal with the potential drop-out must be framed in such a way that they reflect the concern over finances that appears to characterize the potential drop-out.

3. Dependence

Although "dependence" may not be the most propitious label for the characteristic, there were several items in the NORCAL questionnaire designed to assess how likely it would be for students to rely on the judgment of others as they made vocational and academic decisions. Particularly, the focus was on the likelihood that students would turn to their families for advice. Tables 12 and 13 present the distribution of responses to the question, "Assuming you were trying to make an important decision now, how likely is it that you would ask the help of....?". For drop-outs, the two tables indicate that turning to either parent for assistance was not likely. The distribution in these tables is complicated by the fact that more students who withdrew failed to respond to the item than their persisting peers.

As the question was put in the NORCAL instrument, students were also asked to estimate the likelihood of their seeking help from "Others" outside the family. The assuption underlying the question was that having the opportunity to seek advice from any source might differentiate the persister from the drop-out. Other questions in the instrument were structured in the same way to assess the impact of others outside the home on the decision-making process of students who follow different patterns of persistence. Students were asked how important it seemed to "Friend", "Teacher", and "Other" that they attend college; they were asked how important it was that their "best friend came here"; finally, they were asked to characterized themselves as "independent in my thoughts and actions" if that phrase could be descriptive of them in the past. It is useful to note that IN NO CASE WAS THE DISTRIBUTION OF RESPONSES TO THE QUESTIONS RELATED TO DEPENDENCE ON 'OTHERS' INDICATIVE OF ANY STATISTICAL ASSOCIATION BETWEEN THE RESPONSE AND PERSISTENCE STATUS. When we speak of dependence, we are speaking of patterns of affiliation in the families of students; we are assessing the impact of student attitudes about the encouragement of their families for college, and the impact of attitudes of acceptance or rejection of family advice and assistance.

To indicate the possible interaction of the family affiliation patterns with other variables in the questionnaire, responses to the question "Where do you live" are presented in Table 14. Although the numbers aren't very big, there is some indication that students who leave college are less likely to live at home, and somewhat more likely to live with friends, alone, or with a spouse. To get at the same point in yet another way, consider the data in Table 15, which presents responses indicating the importance of "could still live at home" as a reason for attending a particular college. Again, those who withdrew considered this reason to be much less important than those who stayed to complete the semester.

The composite picture of "dependence" or"affiliation with the family", as the variable might more appropriately be called, indicates that drop-outs show attitudes that make it less likely for them to turn within their home for school assistance. Drop-outs are less likely to consider staying at home a vital reason for choosing the particular college they entered, and there is some evidence to indicate that the drop-out is more likely to live outside his parents' home, either alone or with friends. From a theoretical perspective, one might infer that the drop-out is encountering the problem described by Erikson (1959) as "Identity vs. Identity Diffusion". The evidence provokes speculation that, whether the crises of adolescence are coming later or earlier, those who withdraw seem to be notably concerned with their assertions away from family affiliation.

4. Family Encouragement and Value Patterns

Closely related to the findings of the previous set of tables are those associated with patterns of family encouragement and value associated with higher education. Rather than attempting to focus on the student's affiliation or identification with the family (the likelihood of his seeking or heeding the advice of parents, or responding to their concerns), this set of questions was intended to measure the extent of perceived encouragement. In addition, students were asked to characterize their parents using a number of adjectives that might be associated with values or attitudes supportive of higher education.

The key question in this series was "How important do you feel it was to the following people that you go to college?". It has been noted above that for "Friend", "Teacher", and "Other", the distribution of responses among the two groups of students showed that these variables are independent of attrition or persistence in the present sample. For Father and Mother, there was a significant difference in the distribution of the responses, as shown in Tables 16 and 17. Higher parental encouragement for college was associated with persistence.

Other items give greater substance to the finding that family attitude is associated with persistence status. In Table 18, the distribution of responses for "How would you say the adults in the home where you grew up generally thought of your achievements?" is shown for "Father". Observation confirms that more drop-outs than persisters thought the reaction of father to be "Indifferent" or less to school achievements. There was no similar finding in the case of "Mother" on the same item, suggesting that the impact of father's judgment and support may be more strongly associated with persistence in higher education in the current sample.

Students were asked to characterize their parents using a set of twenty adjectives. Evidence for the impact of parental patterns on persistence is again suggested by the distribution of responses on several of these items: drop-outs consistently rated both parents as less likely to be "Kind", "Loving", and "Understanding". At the same time, more drop-outs characterized Mother and both parents as "Moody" (Tables 19 to 22).

The findings presented here verify the conclusion of Trent and Medsker (1967) that the emotional climate of the home plays an important part in determining the persistence of students in higher education. The Trent and Medsker conclusion included the following:

> That a greater proportion of persisters also saw their parents as "loving" is consistent with the finding that, compared with non-attenders, they also perceived their parents to be more ready with praise and more interested in their achievements. (1967, p. 275)

The evidence of common characteristics to differentiate persisters from drop-outs in higher education seems to be increased by the verification of findings in other studies, particularly the Trent-Medsker.

5. Anxiety

The NORCAL instrument included a series of items which students were asked to characterize by "How much do you worry about..." A number of these items have been evaluated above under the section of Affluence. In addition, other items discriminated persisters from drop-outs: Tables 23 through 28 present the distributions of the several items, and indicate that drop-outs tend to express more concern over their "love life" and over "the establishment", but less concern over "international problems" and "race tensions". The evidence of the other tables is confusing, as indeed it is for all of the items of the "Worry" scale: no clear picture seems to emerge of the drop-out, since distribution patterns really are not substantially different in any consistent direction. Rather than indicating a consistent pattern of concerns, these tables suggest a confusion and diversity of worry patterns among students.

6. Goals

The question of "Goals" was put in the NORCAL questionnaire in the following way: "What is your reason for coming to college?" In addition, students were asked what occupations they eventually expected to be in, and what major they intended to follow. While a complete analysis of the latter two questions has not yet been done, some indication of the relationship between goals and persistence can be gathered from the responses to the "reason for college" question, presented in Table 29. It is apparent that more drop-outs than persisters showed indecision, or a preference for the vocational and technical training offered in community colleges, as opposed to the clear preference of persisters for transfer goals.

The issue of goals is complex, and further comments appear below in the section on institutional characteristics associated with attrition. The central question raised by the expressed preference of drop-outs for less than four-years of college experience is whether this experience should be in the vocational and technical programs currently available in community colleges. There is some evidence, again to be included below, to suggest that the most attrition-prone students are those who express the preference for the two-year programs, and the most attrition prone institutions are those in which the greatest number of student share this preference.

A study conducted by Edwin Young at Los Angeles City College included the measurement of interests in the Kuder Preference Record for a group of "provisional students" of low ability: his findings indicate that both males and females in the group had low interests in outdoor and mechanical activities. Males showed high interest in artistic and clerical activities; females, in social service (1966, pp. 105 - 12). Although it is merely speculation at this point, there is enough evidence to raise the question of whether the vocational and technical programs available in community colleges are responsive to the expressed and measured interests of students preferring a two-year education. For those who are encouraged to make second choices, or choices away from the professional occupations requiring advanced degrees, the reasonable choices may not be in the traditional shops or laboratories, but in vocations such as Home Health Aide, Nursery School Teacher, or other para-medical or social service occupations that seem to be emerging.

7. Values

The question of how important education is to students was posed in several different ways in the NORCAL instrument. Perhaps most conspicuously, the question was asked, "How important do you feel a college education is for each of the following?" (Men, Women, For me, personally). Table 30 shows the distribution of responses indicating the importance of college to the individual. It is not surprising that a greater number of students who persisted reported college to be "very important" to them.

There were other measures of "academic motivation" or "importance of college" in the questionnaire. Students were asked to choose between "making grades" or "participating in activities" for several specific options: although several of the distributions suggested an association between the response and persistence status, the majority of these distributions were skewed by the fact that more drop-outs failed to respond to the item. Table 31 indicates the distribution of responses for the choice between "making grades" and "having as many dates as I want". This distribution appeared to be the only one to differentiate persisters from non-persisters in any meaningful way.

8. Self-Concept

The self-concept scale was constructed to include twenty items measuring various facets of the student's value system about himself as a student. No pattern of responses emerged on any of the items to differentiate persisters from drop-outs: the only significant Chi-square values were on items that seemed to suggest that drop-outs saw themselves to be more lucky than persisters (by a magnitude of thirty-six students of the 2,743), and more organized (by a magnitude of seven students). Unfortunately, the cumulative pattern of the self-concept scale failed to differentiate the two groups.

Summary - A composite picture of the attrition-prone student

From the findings above, it is possible to construct a hypothetical picture of the potential drop-out, using evidence related to his expressed opinions, attitudes, and beliefs measured by the NORCAL questionnaire.

1. The potential drop-out is likeliest to be Negro; least likely to be Oriental.
2. The potential drop-out is likely to be married, or divorced or separated.
3. The potential drop-out is likely to be employed part-time in a job that is not related to the college major program for which he is enrolled.
4. The potential drop-out is likely to come from a family that is less affluent, and is likelier to express greater concern over matters of finance and employment.
5. The potential drop-out is likely to be both physically and/or psychologically distant from his parents's home: he is less likely to turn to his parents for advice, and less likely to be living under the same roof.
6. The potential drop-out is likely to have less perceived parental encouragement for his college plans.

7. The potential drop-out is likely to characterize both parents as less loving, kind, or understanding than his persisting counterpart.
8. The potential drop-out shows a lower sense of importance of college.
9. The potential drop-out is likely to have lower educational aspirations than the persister.

Again, these findings are not new in the literature, but the verification of them on such a large sample of community college students is of some value: it is apparent that the models of remedial or tutorial assistance, and of extensive counseling for the probationary or provisional students have been based on what now appear to be virtual truisms of student characteristics research. The major question is whether the knowledge gained in the current study can be used to improve the ability of community colleges to identify more exactly the students most likely to withdraw, and whether, given this predictive model, it is possible to create alternatives to the approaches to counseling and curriculum building that may have an impact on the attrition rate.

B. The Multiple Regression Analysis Of Potent Variables

Having completed the preliminary evaluation of the entire NORCAL research instrument, the second step in the research was to attempt to weight categorical responses to each of the questions which had been identified as having a statistical association with persistence status. Of the original 112 items, approximately thirty had been identified, using the Chi-square test of independence presented in Part A above.

For this step in the research, the statistical program developed by Alan B. Wilson of the Survey Research Center, University of California was used to obtain regression weights for the categorical responses. The general regression equation for a three-variable problem where X^1 is the variable to be predicted is:

$$X^1 = ab_{12.3}X_2 + b_{13.2}X_3$$

> The 'b' coefficient gives us the slope of the regression line, and it depends upon the coefficient of correlation and the standard deviations...The regression coefficient 'a' is a constant...(that) assures that the mean of the predictions will equal the mean of the obtained values. (Guilford, 1956, p. 367)

An extended application of the multiple regression technique to categorical data by Wilson resulted in the WLSQ program which was used in the current study. Wilson summarized the procedure as follows:

> Regression analysis may be extended to include nominal categorization by assigning the 'dummy' value of one if an individual belongs to a particular category, and zero if he does not...A regression coefficient is estimated for each category of the nominal variable with the constraint that their weighted sum shall be equal to zero. (Wilson, 1966, p. 115)

Output from the WLSQ includes a multiple correlation coefficient, multiple R squared (an estimate of the amount of variance accounted for in the dependent variable), partial correlation coefficients for each set of responses, and sets of regression weights, both in dependent variable units, and "normalized" under the assumption of a mean of zero and a standard deviation of 1 in the dependent variable. The only further restriction on the WLSQ program is that of size: only up to ten questions including no more than three responses (categories) can be accomodated by the program.

It was decided to proceed with at least two analyses, taking the most potent predictors first, as identified in the first step of the research. The first set, with the derived statistics indicated, is presented in Table 32. Weights are given as positive for attrition, negative for persistence.

Table 33, the multiple correlation and squared multiple correlation are given: according to this estimate, only four per cent of the total variance in the dependent variable (persistence status) was accounted for by this set of predictors, even though it contained several of the most potent predictors identified.

A second set of predictors was developed, with the resulting WLSQ analysis yielding the following figures (Table 34). Again, these were among the most potent variables identified by the first step in the research. The resulting multiple correlation (.11) and squared multiple correlation (.01) suggest that, even if the two sets of variables were combined, no more than five per cent of the total variables would be accounted for in the dependent variable (persistence status). As a model for prediction, then, the set of questions used in the NORCAL study seemed useless.

Additional steps had been called for in the design of the research: an analysis of the interaction among the variables most significantly associated with attrition or persistence was to have been done, using the Automatic Interaction Detection Program developed by Sonquist and Morgan at the Survey Research Institute, University of Michigan. With such low multiple correlations, however, it seemed of little value to identify the most potent predictors in an alternative way, since the improvement of the predictive value of the model seemed unlikely. The AID analysis can still be performed, but its value may be small, given the results of the WLSQ analysis.

The other step in the research was to develop discriminant scores for each subject in each college, using the weights derived in the WLSQ analysis as the basis for the scoring process. Although the total variance accounted for seemed too small for productive discriminant analysis, the scores were developed and their distributions examined in each of the participating colleges.

C. The Discriminant Analysis

The most direct appraoch to the discriminant analysis problem was described by McNemar (1962), who noted that "we may compute the weighted scores for all N cases and then make distributions for the two groups separately in order to scrutinize the amount of differentiation (or overlap) present." (1962, p. 205).

To remove the decimal place at the beginning of the scores, each beta weight from the WLSQ analysis was multiplied by ten, and the weighted scores were summed across the ten predictive variables to yield the discriminant score for each individual. The resulting discriminant scores for each individual in the analysis are available to each institution. In no case was the empirical validity greater than .60.

A number of considerations may have contributed to the weakness of the model. Primarily, the factor of time seemed to be operating against prediction: the differences between students who complete a semester seem not to be sufficient for prediction. In an independtly conducted study by MacMillan, a comparison was made of students who withdrew during their initial semester of attandance with students who persisted for two years in community colleges in a national sample. The weights and variables are presented in Table 35. Empirical validity of MacMillan's model was tested on an independent sample of students entering Laney and Merritt Colleges in 1968. An empirical validity of .79 was obtained for the Laney-Merritt sample. It is clear that, while the NORCAL instrument was able to provide the basis for discovering significant differences in the distributions of responses of persisters and drop-outs in the twenty-three institutions, the multiple correlation of the combined variables with persistence status was simply inadequate for the task of prediction. It is conceivable that combining the most potent predictors from the NORCAL study with the variables used by MacMillan in the independent study, an adequate prediction of individual attrition could be expected. Under these circumstances, the NORCAL project could continue, using a combined list of questions from both studies.

Findings:
Institutional Characteristics And Attrition

Each participating institution was asked to supply a list of additional information to the project, including a variety of data about the college and the community it serves. Complete information was available for twelve of the colleges in the NORCAL study, and Spearman rank-difference correlation coefficients were calculated to assess the strength of the association between selected characteristics and attrition. The significance of each Rho was tested using a formula suggested by McNemar (1962):

$$t = \rho\sqrt{\frac{N-2}{1-\rho^2}}$$

Variables which were significantly correlated (.05) with institutional attrition included the following: 1) The proportion of students in the NORCAL sample declaring a transfer intent; 2) Counselor/student ratio; 3) Racial mix, reflected in the proportion of Caucasian students in the NORCAL sample for each institution; 4) Mean score for the institution NORCAL sample on "Importance of College to Me"; 5) Mean score for the institution NORCAL sample on "Parental Encouragement for College"; 6) Proportion of people in the County served by the college reporting four years or more of college (1967 census data); 7) Assessed valuation per unit of ADA. The correlations were computed ranking institutions by the proportion of students who withdrew in the NORCAL study, ranking the school with the highest attrition first: all other variables were ranked in the opposite direction, thus making the correlations negative (e.g., schools with greater racial mix - fewer Caucasians- had a higher proportion of students who withdrew). The summary data are presented in Table 36. One additional figure may be added for comparison: Rho for "Attrition" and "Size of the College (active enrollment)" was .73 which reflects the obvious general tendency for larger institutions to have a greater number of drop-outs, but also suggests that not all of the larger institutions had a greater proportion of drop-outs. Interestingly, the institution with the lowest attrition rate was one of the larger colleges in the study.

The Spearman Rank-Difference correlations suggest, too, that the impact of the environment of the community college is likely to have a particularly strong impact on attrition. The college with the greatest attrition also had the following characteristics: 1) greatest racial mix; 2) least number of declared transfer majors; 3) greatest number of terminal majors; 4) lowest mean score on the "Parental Encouragement", "Importance of College to Me", and "Self-Concept" variables from the NORCAL instrument.

A further value for the institutional comparison was that it provided an index of the possible value of some of the individual characteristics which had been identified in the attempt to build the predictive model of attrition. Race, College Goal, Parental Encouragement, Importance of College to Self had all been identified as variables having a significant statistical association with individual attrition. The cumulative impact of a college environment in which all or a majority of the student imput characteristics were associated with attrition seems to be indicated by the institutional rankings on these characteristics.

The most interesting, perhaps, is the Rho showing the association between student attrition and the proportion of four-year college educated in the county served by the college. As one index in the importance of college in the home environment, this variable tends again to substantiate the impact of the family, the values held by the student, and the impact of the institution as central to the process of deciding whether to continue in higher education.

In Table 37, the ranks of the twelve institutions are shown, with the additional nine variables that seemed most strongly associated with attrition rates listed for each institution. The table provides the basis for much speculation about the individual institutions: why does institution 9, with nearly as great a racial mix as institution 1, and with an even higher counselor/student ratio, succeed in achieving greater holding power? Why are the aspirations of the students in institution 9 higher than those in institution 1? What forces are operating on institution 8, whose students seem to have a low self-concept, low mean score on Importance of College to Self, and low transfer aspiration level in the student body, yet seems to have above average holding power among its constituents (perhaps because of the high parental encouragement in this nearly rural community)? There are indeed positive exceptions to the directions indicated by the ranks of the institutions, and it is perhaps to these institutions that we must turn for leadership.

Perhaps most noteworthy is the institution at the bottom of the list, with an attrition ratio of 4.64 students in every 100 of the NORCAL sample. This college is noteworthy because it has, like others much nearer the top of the list, been rocked by racial strife and student unrest. Again what seems to matter so much is the community envirnoment (14.2 per cent have four years or more of college) in which parental support for college is likely to be an important factor - reflected in the high transfer aspirations of the students.

Summary

It is quite clear from this section of the report that there are institutional characteristics which tend to create greater patterns of attrition: the proportion of students declaring transfer intent, the counselor/student ratio, the proportion of persons in the county served by the college claiming four years or more college education, the racial mix of the county, the mean scores on "Parental Encouragement", "Importance of College to Me", and the assessed valuation per unit of ADA are all significantly associated with the ranks of the institutions on attrition.

It is also quite clear that a number of the variables are not within the span of control of the institution. One cannot simply change the proportion of four-year college graduates in the county, or easily change the assessed valuation per ADA. It is, however, possible, to increase the racial mix or to change the counselor/student ratio by increasing staff performing counseling and related functions, or perhaps by using students as counselors and tutors for other students.

The variables most strongly associated with attrition in the ranking of the institutions tend to bear out the individual characteristics of the students in the NORCAL study: just as individuals with low aspirations tended to withdraw, so also was there greater attrition in the institutions reflecting a lower level of aspiration among the students generally. Other variables were similarly verified as meaningful in the decision making process leading to attrition or persistence. In general, the comparison of institutions added strength to the NORCAL findings, and provided the basis for recommending some alternative courses of action for these institutions in Phase II of the project.

Alternatives of Action in Phase Two: 1969 - 70

From the findings presented above, it is possible to derive abundance of suggestions for action. This report, although intentionally somewhat cursory, is an attempt to provide the basis for meaningful decisions at the conclusion of only one of three projected phases to the NORCAL project. There are, generally, three possible alternatives that may be elected by the participating colleges and the research committee:

I. Discontinue the project entirely.

II. Continue the project using a combined instrument consisting of questions from previous research as well as the NORCAL instrument. Continuing to emphasize the prediction of attrition.

III. Continue the project, but with emphasis on one of several new directions, including, but not limited to: a) a longitudinal investigation of attrition among the original NORCAL sample students; b) the development of a computer assisted counseling model using the clues derived from phase one, but emphasizing the counseling interactions taking place within institutions rather than concentrating on the prediction of attrition; c) the development of cooperative research on the impact of such special programs as tutorial services, auto-instructional devices, diversified and reconceptualized financial aids packages for students, non-penalty grading and class withdrawal policies, etc., without validating the current NORCAL instrument.

A. Alternative I

Much has been learned, and many frustrations endured by the participating colleges. But the clear and simple fact of the matter is that we are not able to predict individual attrition with the model derived from the study at this time. There is also the consideration of perspective, which has developed among many as the results of the research have become available: does the loss of an average of ten per cent of the entering freshmen during the initial semester or quarter constitute a significant problem? Is it worth the investment of staff time and research facilities to predict attrition among 40 to 100 students? Can we reasonably expect to improve the model, or have we ultimately to admit that assessing attitudes and beliefs is not a productive direction as we attempt to predict individual attrition in community colleges?

B. Alternative II

Independent investigation during the 1968 - 69 academic year by the NORCAL Project Director has yielded a set of questions which was used successfully to predict individual attrition among randomly selected subjects at Laney and Merritt Colleges in the Peralta District. A number of these subjects were also included as NORCAL participants, but the NORCAL responses alone were not of sufficient value to predict in the sample. THE KEY DIFFERENCE IN THE DEVELOPMENT OF THE MODEL OF ATTRITION IN THIS INDEPENDENT STUDY WAS THE USE OF NATIONAL SAMPLE DATA, ALLOWING FOR A COMPARISON WITH STUDENTS WHO PERSISTED FOR TWO YEARS, BUT FAILED TO GET THEIR AA DEGREES. This factor alone, the factor of time and distance between the measurement of persisters and the measurement of dropouts, seemed to be the essential ingredient in the development of the more adequate model of attrition. It seems likely that if we were to wait for two years and then compare the students in the original NORCAL group with students who persisted for two years, the same differences we now find to be a little predictive value would become of great predictive value in a regression model.

If the choice is not to wait, a reasonable alternative is simply to borrow the questions, the categories, and the beta weights from MacMillan's research, and, using these in combination with the best variables in the current study, proceed on the assumption that this set may be an adequate model of individual attrition, and that the responses will be meaningful as predictors. It is important to recognize that the research design for the independent study was identical to the design for the NORCAL project and to recall that the key difference in the development of the two models was the difference of time span separating the persist and drop-out samples.

Continuing the study on the same plan that had been developed at its conception would allow for the development of experimental programs of counseling, administrative practice, and instruction that may have an impact on attrition at every stage in the career of the community college student. If, as the findings to date may suggest, the factors associated with attrition are really quite fundamental ones, regardless of when the attrition actually occurs, then experimentation may have an impact as well on attrition between semesters or quarters, and indeed on attrition between the two years of the community college experience. Although this is merely speculative at this time, it is likely that dealing with students who "haven't got much going for them" as potential persisters may have an unexpected effect on the persistence of students college wide; a kind of institutional halo effect.

Finally, there is the obligation to acknowledge what has been the significant effort of the participating colleges to create a common data base for this cooperative project. With extensive information available for over 28,000 students in community colleges, is it feasible to drop the project and its aims entirely? What has not been gained thus far may yet be gained through more intelligent and more capable use of computer programs, including simulation models of attrition over several consecutive semesters. While the findings do not allow the prediction of individual behavior at an acceptable level thus far, it is nonetheless true that a number of individual and institutional characteristics associated with attrition have been identified to be significant, and there is a firm conceptual basis on which further research can be built much more economically than might have been anticipated before the completion of Phase I.

C. Alternative III

A number of directions have been considered as alternatives to the persistence-withdrawal emphasis currently being entertained by NORCAL as an exclusive concern: specifically, information has been developed and interest has been expressed in two particular uses of the NORCAL data collected to this point.

1. Longitudinal study of attrition patterns among the original NORCAL students.

Dr. John Smart of the Coordinating Council for Higher Education has expressed the interest of the Council in observing the NORCAL sample over several consecutive semesters to develop a feel for attrition at different points in the community college years. While it is clear that we could not take on the enormous task of following each individual through his entries and exits from a number of institutions, it is well within the realm of possibility to observe the sample at the opening and close of each successive enrollment period to observe and report which students have withdrawn from the original institution, and, where feasible, scan the transcripts of those individuals who have withdrawn or failed to return to observe any patterns that may tend to be associated with attrition at various times in the college career. It would also be possible, of course, to do comparisons of each successive group of drop-outs with each of the former groups of drop-outs, beginning with the current sample of students withdrawing during their initial enrollment period. In this way, it would become evident whether new variables tend to be associated with attrition at later intervals, or whether the same variables tend to continue, but to become more potent as predictors of attrition in successive comparisons. It is anticipated that the money needed to perform the clerical task of retrieving the lists of student withdrawals could be budgeted by the Council as an adjunctive grant to the NORCAL project.

2. Computer assisted counseling models

Dr. Malcolm McAffee of the California State College at Hayward, and a consultant to Napa Community College, has been most insightful in his suggestion of a model for computer assisted counseling and improving the program as the study continued to yield results. The function of the program would be to allow for a rapid retrieval of messages, stated in behavioral terms, for counselors engaged in the counseling process with an individual student. The model could be interactive as well as static, with options for the counselor to submit additional bits of information and receive additional recommendations for counseling the individual.

The algorithm for the program is extremely simple, consisting of the comparison of an individual's scores with scores set in a pre-determined matrix, and of messages for each matrix score in the set. Experimentally, this program is being developed for the sets of data in the original NORCAL sample, and is expected to be operational at Napa College for Fall registration, 1969. Twenty-eight variable scores are to be used in the original data set, with over seventy specific messages being made available to the counselor. The emphasis is on counseling interaction, rather than on the prediction of attrition: although we cannot at this point predict attrition, we can, nonetheless, discover patterns of retention, tutorial service, or financial assistance for the individual student, and we can make it feasible to alert counselors immediately through messages stated in behavorial terms, to which he may refer during or prior to an initial interview with the student.

Other suggestions may be entertained for the improvement or change in the direction of the NORCAL project. If additional funding were available, would there be a need for a full-time project director to assist in the development of a new program? The range of options opened by acknowledging that our failures may be our successes, in the sense that they free us to turn to another more fruitful approach to community college student services, is indeed impressive.

The combination of alternatives II and III seems most productive at this point: it allows for the integrity of the project as planned, and also allows for sufficient flexibility to explore the usefulness of new ideas. The combination of these alternatives would not materially increase the assignment of the project director, since additional funding from sources other than NDEA may make the hiring of additional clerical staff feasible, and since the software for the exploration of the Computer-Assisted-Counseling program has been virtually developed by Dr. McAffee and the current project director. Other alternatives under III may be accepted as the challenge and responsibility of the individual campus representative. As the NORCAL project continues through its second and third phases, the concomitant increase in responsibility on individual campuses will be felt more and more strongly. Although we can continue to exchange ideas in individual campus meetings and group meetings of the Northern California Research Group, the ideas for experimentation must be conceived within the limitations of possibility in each campus setting. From the other viewpoint, we must also recognize the limitations of a single-man enterprise, as the NORCAL project has been executed to this point: those limitations are of course both in time and in ability to respond to the stimulus of twenty-three campus representatives at the same time. The responsibility for generating ideas must be shared.

Table 1

Distribution of NORCAL Sample
by Persistence and Race

	Caucasian	Negro	Oriental	Other	
Persist	1004	143	124	163	1434
Dropout	974	200	50	164	1388

Chi-square = 42.52 df = 3

p.<.001

Table 2

Distribution of NORCAL Sample
by Persistence and "Marriage"

	Single	Married	Div/Sep	N.R.	
Persist	1301	112	13	8	1434
Dropout	1194	145	40	9	1388

Chi-square = 21.96 df = 3

$p. < .01$

Table 3

Distribution of NORCAL Sample
by Persistence and "Keep Job"

	Yes	No	No Empl.	N. R.	
Persist	583	228	540	83	1434
Dropout	668	165	490	65	1388

Chi-square = 21.01 df = 3

$p. < .01$

Table 4

Distribution of NORCAL Sample by Persistence and "Job Related"

	Yes	No	Not Empl	N.R.	
Persist	170	594	524	146	1434
Dropout	180	632	465	111	1388

Chi-square = 9.655 df = 3

$p. < .05$

Table 5

Distribution of NORCAL Sample by Persistence and "Need Aid"

	Yes	No	N.R.	
Persist	258	1104	72	1434
Dropout	296	1002	90	1388

Chi-square = 14.47 df = 2

$p. < .05$

Table 6

Distribution of NORCAL Sample
by Persistence and Dad's Job

	Un-empl	Un-skill	Semi-skill	Skill	Mang	Prof	N.R.	
Persist	22	166	264	477	255	199	51	1434
Dropout	35	160	260	534	205	157	37	1388

Chi-square = 18.907 df = 6

$p. < .05$

Table 7

Distribution of NORCAL Sample
by Persistence and Family Finances

	Poor	Rocky	Adeq	Comf	Well Off	N.R.	
Persist	43	119	630	585	26	31	1434
Dropout	53	147	593	545	24	26	1388

Chi-square = 8.311 df = 6

n.s.

Table 8

Distribution of NORCAL Sample by Persistence and Worry: Debts

	Very Little	2	3	Very Much	N.R.	
Persist	431	449	311	167	76	1434
Dropout	377	403	284	248	76	1388

Chi-square = 21.97 df = 4

$p. < .01$

Table 9

Distribution of NORCAL Sample by Persistence and Worry: Working

	Very Little	2	3	Very Much	N.R.	
Persist	390	381	349	235	79	1434
Dropout	347	301	318	327	95	1388

Chi-square = 29.123 df = 4

$p. < .01$

Table 10

Distribution of NORCAL Sample by Persistence and Finding a Job

	Very Little	2	3	Very Much	N.R.	
Persist	619	295	240	185	95	1434
Dropout	613	210	195	249	121	1388

Chi-square = 30.995 df = 4

$p. < .01$

Table 11

Distribution of NORCAL Sample by Persistence and Worry: Car Payments

	Very Little	2	3	Very Much	N.R.	
Persist	1035	130	81	70	118	1434
Dropout	924	131	82	110	141	1388

Chi-square = 16.501 df = 4

p. $<.05$

Table 12

Distribution of NORCAL Sample
by Persistence and Father's Help

	Never	Not Likely	Dep	Likely	Very Likely	N.R.	
Persist	129	154	341	214	310	286	1434
Dropout	155	168	335	157	231	342	1388

Chi-square = 28.402 df = 5

$p. < .01$

Table 13

Distribution of NORCAL Sample by Persistence and Mother's Help

	Never	Very Unlikely	Dep	Likely	Very Likely	N.R.	
Persist	71	125	349	258	387	244	1434
Dropout	85	140	359	208	283	313	1388

Chi-square = 32.208 df = 5

$p. < .01$

Table 14

Distribution of NORCAL Sample
by Persistence and Residence

	Parents Home	With Friends	Alone	Married	N.R.	
Persist	1165	80	65	104	20	1434
Dropout	1039	99	88	137	25	1388

Chi-square = 17.006 df = 4

p. < .01

Table 15

Distribution of NORCAL Sample by Persistence and Reason: Live at Home

	Very Unimp	2	3	Very Imp	N.R.	
Persist	525	174	275	352	108	1434
Dropout	589	173	209	279	138	1388

Chi-square = 24.040 df = 4

$p. < .01$

Table 16

Distribution of NORCAL Sample by Persistence and Mother's Encouragement

	Low	Moderate	Good	High	N.R.	
Persist	117	98	261	899	59	1434
Dropout	133	114	270	781	90	1388

Chi-square = 16.37 df = 4

p.<.01

Table 17

Distribution of NORCAL Sample by Persistence and Father's Encouragement

	Low	Moderate	Good	High	N.R.	
Persist	144	129	251	807	103	1434
Dropout	154	162	270	661	139	1386

Chi-square = 23.75 df = 4

$p. < .01$

Table 18

Distribution of NORCAL Sample by Persistence and Father's Support

	Be-little	Never Satis	Indef	Good/Bad	Praise	N.R.	
Persist	31	84	119	651	364	185	1434
Dropout	51	91	126	583	308	229	1388

Chi-square = 17.749 df = 5

$p. < .05$

Table 19

Distribution of NORCAL Sample
by Persistence and "Kind" Parents

	Father	Mother	Both	N.R.	
Persist	108	323	585	357	1373
Dropout	129	360	490	391	1370

Chi-square = 13.78 df = 3

$p. < .01$

Table 20

Distribution of NORCAL Sample
by Persistence and "Loving" Parents

	Father	Mother	Both	N.R.	
Persist	49	324	614	386	1373
Dropout	75	351	540	404	1370

Chi-square = 11.79 df = 3

$p. < .01$

Table 21

Distribution of NORCAL Sample by Persistence and "Understanding"

	Father	Mother	Both	N.R.	
Persist	179	407	496	291	1373
Dropout	179	465	414	312	1370

Chi-square = 12.02 df = 3

$p. < .01$

Table 22

Distribution of NORCAL Sample
by Persistence and Moody

	Father	Mother	Both	N.R.	
Persist	266	247	102	758	1373
Dropout	255	309	126	680	1370

Chi-square = 27,724 df = 3

p.< .01

Table 23

Distribution of NORCAL Sample by Persistence and Worry: Love Life

	Very Little	2	3	Very Much	N.R.	
Persist	544	437	250	137	66	1434
Dropout	492	398	248	160	90	1388

Chi-square = 8.096 df = 4

n.s.

Table 24

Distribution of NORCAL Sample by Persistence and Worry: Race Tensions

	Very Little	2	3	Very Much	N.R.	
Persist	444	388	294	216	92	1434
Dropout	489	310	254	217	118	1388

Chi-square = 15.112 df = 4

p.< .05

Table 25

Distribution of NORCAL Sample
by Persistence and Worry: Establishment

	Very Little	2	3	Very Much	N.R.	
Persist	580	376	246	119	113	1434
Dropout	561	291	230	157	149	1388

Chi-square = 20.010 df = 4

$p < .01$

Table 26

Distribution of NORCAL Sample
by Persistence and Worry: International Problems

	Very Little	2	3	Very Much	N.R.	
Persist	405	444	328	167	90	1434
Dropout	451	354	287	155	141	1388

Chi-square = 26.320 df = 4

$p. < .01$

Table 27

Distribution of NORCAL Sample
by Persistence and Worry: Draft

	Very Little	2	3	Very Much	N.R.	
Persist	789	152	138	204	151	1434
Dropout	800	116	125	161	186	1388

Chi-square = 13.509 df = 4

$p. < .001$

Table 28

Distribution of NORCAL Sample by Persistence and Worry: Marriage

	Very Little	2	3	Very Much	N.R.	
Persist	854	287	127	72	94	1434
Dropout	816	235	119	97	121	1388

Chi-square = 10.259 df = 4

$p. < .05$

Table 29

Distribution of NORCAL Sample by Persistence and "Reason for Coming to College"

	Undec	Courses	Term 1	Term 2	Term 3	Trans	N.R.	
Persist	101	56	184	75	186	796	38	1436
Dropout	158	74	222	110	211	606	56	1436

Chi-square = 55.96 df = 6

p.< .001

Table 30

Distribution of NORCAL Sample by Persistence and "Import of College"

	Low	Some	Quite	Extreme	N.R.	
Persist	49	50	253	1033	49	1434
Dropout	69	79	257	915	68	1388

Chi-square = 19.43 df = 4

p.< .001

Table 31

Distribution of NORCAL Sample
by Persistence and Making Grades vs. Dates

	Grades	Dates	N.R.	
Persist	1086	237	111	1434
Dropout	967	269	152	1388

Chi-square = 15.274 df = 2

$p. < .01$

Table 32

Normalized Regression Coefficients

Variable	Category		Persist
Sex	1.	Blank	-.021
	2.	Male	.017
	3.	Female	-.024
Race	1.	Cau	.003
	2.	Black	.040
	3.	Orient	-.091
Dad Job	1.	Low	-.003
	2.	Mid	.020
	3.	High	-.021
	4.	Other	-.034
Major	1.	Undec	.051
	2.	Courses	.034
	3.	Term	.040
	4.	Trans	-.054
	5.	Other	.022
Penc	1.	High	-.037
	2.	Other	.031
Imps	1.	High	-.009
	2.	Low	.018
	3.	Other	.008
Parents	1.	Blank	.013
	2.	Low	.037
	3.	High	.011
	4.	Other	-.035

Table 33

Reductions in Sums of Squares Due to Fitting Constants

	Persist
Total Variance	.25
Degrees of Freedom	3554.
Main Effect Variance	2.17
Degrees of Freedom	17.
Squared Multiple Correlation	.04
Multiple Correlation	.20
Error Variance	.24
Degrees of Freedom	3537.
Main Effect to Error Ratio	8.99

Table 34

Normalized Regression Coefficients

Variable	Category	Persist
Keep Job	1. Yes	.033
	2. Others	-.027
Aid	1. Yes	.038
	2. Other	-.008
Help	1. High	-.059
	2. Low	.008
Worry	1. High	.021
	2. Low	-.000
Self Con	1. Low	.001
	2. Mid	.005
	3. High	-.009
	4. Other	.020

Reductions in Sums of Squares Due to Fitting Constants

	Persist
Total Variance	.25
Degrees of Freedom	3556.
Main Effect Variance	1.46
Degrees of Freedom	7.
Squared Multiple Correlation	.01
Multiple Correlation	.11
Error Variance	.25
Degrees of Freedom	3549.
Main Effect to Error Ratio	5.87

Table 35

Variable	Response	Weight
Sex and Ability (combined) (.28)	1. hi male	.039
	2. hi female	-.022
	3. mid male	.022
	4. mid female	-.107
	5. low male	.211
	6. low female	-.082
Importance of College to Self	1. no response	-.206
	2. high	-.043
	3. low	.165
Source of School Advice	1. no response	.041
	2. mon - dad	-.157
	3. others	.105
	4. no one	.051
Mother Working (.19)	1. yes; full-time	.149
	2. other	-.063
Likeliest Obstacle to College Attendance (.15)	1. academic	-.048
	2. financial	-.034
	3. marriage	-.048
	4. health	-.002
	5. other	.131
Plans for a Higher Degree (.12)	1. blank	.108
	2. likely	.020
	3. unlikely	-.037
Definitely Planning to Attend (.12)	1. yes, definitely	-.015
	2. other	.079
Lack of Anxiety (Omnibus Personality Inventory Scale) (.07)	1. high	-.034
	2. low	.045
Social Maturity (Omnibus Personality Inventory Scale) (.11)	1. high	-.046
	2. low	.052

Table 36

Spearman Rank-Difference
Correlation Coefficients
for 12 Selected Schools
(Attrition is the Constant)

1. Proportion of Transfer Declared Students in the NORCAL Sample
   Rho: -.38

2. Counselor Student Ratio
   Rho: -.35

3. Proportion of Four-year College Graduates in the County
   Rho: -.34

4. Mean Score "Import of College to Me"
   Rho: -.33

5. Mean Score "Parental Encouragement"
   Rho: -.33

6. Racial Mix (Proportion of Caucasians)
   Rho: -.33

7. Assessed Valuation per ADA
   Rho: -.30

Table 37

Ranks of 12 NORCAL Schools on the Proportion of Attrition Showing 9 Other Variables

Prop Drops	Prop Trans	Prop Term	Prop Cau	Coun/Stu Ratio	County Percent Coll	AV/ ADA
1	38.85	37.69	60.00	1/430	11.2	98,497
2	54.79	26.52	89.00	1/534	4.6	128,193
3	53.21	24.64	88.00	1/437	11.2	167,000
4	54.19	34.19	85.80	1/441	8.7	169,000
5	51.66	32.43	81.00	1/420	5.6	98,665
6	64.84	24.13	92.00	1/390	12.7	137,742
7	56.78	23.76	98.00	1/530	7.0	105,475
8	46.14	29.37	97.10	1/531	6.2	133,166
9	57.90	26.90	70.00	1/500	10.1	85,000
10	55.02	32.59	86.10	1/367	11.2	113,977
11	57.91	28.92	96.00	1/415	10.7	92,143
12	58.25	28.24	89.00	1/501	14.2	130,307

Prop Drops	Mean Penc	Mean Imps	Mean Self-Concept
1	5.26	3.07	85.29
2	5.98	3.35	86.65
3	5.68	3.24	92.90
4	6.52	3.69	95.66
5	6.63	3.59	98.50
6	6.32	3.51	97.87
7	5.75	3.16	94.46
8	7.83	3.24	85.37
9	6.36	3.50	94.47
10	6.21	3.49	95.53
11	6.03	3.48	94.63
12	6.29	3.41	94.59

APPENDIX

I. Institutional Characteristics:

The following will be used to define an institution in this study:

1. Size as determined by active Fall Semester enrollment as of the fourth week for (a) day students and (b) evening students (as defined by the State Department of Education).
2. Student-Counselor ratio as determined by day students per full time counselor (full time equivalent counselor).
3. Percentage of students enrolled in accupationally oriented curricula.
4. Adjusted assessed valuation per ADA.
5. Community environment as expressed by one or more of the following:
    a. Big City - a community with all of the problems of large cities in the 1960's.
    b. Suburban - a community which is primarily housing oriented; however, may have some light industry.
    c. Rural - a community which may include several small distinct towns and their adjacent suburbs. A community typically described as "agricultural" would be classified here.
    d. Academic standards as expressed by admission and probation policies.

II. Student Characteristics:

A student's characteristics are defined to be:

1. Educational objective as stated by the student:
    a. transfer
    b. vocational
    c. undecided
    d. other
2. Number of units completed beyond high school at the time of registration.

3. Units (credits) for semester under study.
    a. initially attempted (at time of registration)
    b. existing (at time of withdrawal)
4. High School GPA.
5. Last completed college term's GPA, if any.
6. Cumulative college GPA (all college work).
7. Distance from place of residence to institution.
8. Residence status,
    a. Single Student
        (1) at home
        (2) other
    b. Married Students
9. Age
10. Sex
11. Financial aid (through the institution).
12. Prior high school of attendance.
13. Eligibility at time of high school graduation.
    a. University eligible
    b. State college eligible
    c. neither
14. Student status.
    a. first time college
    b. continuing Freshman (less than 30 units completed)
    c. continuing Sophomore (more than 30 units completed)
    d. continuing transfer
    e. first time transfer
    f. readmitted after disqualification
    g. returning students
15. Academic status.
    a. good standing
    b. probation
    c. special probation (non high school graduate - only used at time of entrance into college)

16. Entrance examinations (corrected to ACT scores)
17. College major (as stated by the student)
18. Other characteristics as determined.

For College Use Only
(1-2) ☐☐ College

NORTHERN CALIFORNIA JUNIOR COLLEGE COOPERATIVE STUDY

Please complete the following questionnaire to the best of your ability. In most cases, your responses will consist of circling the appropriate number or numbers. Please note that there are three pages. Thank you.

Last Name ______ First Name ______ Middle Initial ______

(3-11) ☐☐☐☐☐☐☐☐☐ Student Number

(12) ☐☐ Age

Circle the appropriate number for each of the following questions:

(13) Sex:
1 Male
2 Female

(14) Race:
1 Caucasian
2 Negro
3 Oriental
4 Spanish Surname
5 Other

(15) Marital Status:
1 Single
2 Married
3 Divorced/Separated

(16) If employed, will you keep your job while attending college?
1 Yes
2 No
3 Not employed

(17) If employed, is your job related to the program for which you are registered?
1 Yes
2 No
3 Not employed

(18) Where do you live?
1 at home with parents
2 with friends
3 alone
4 married

(19) How do you get to college?
1 my own car (not motorcycles)
2 parent's car
3 riding with other students
4 public transportation
5 other (including motorcycles)

What is your major course of study? ______

(20) Will you need financial aid in some form to remain enrolled in this college? 1 Yes 2 No

A. In the home in which you grew up, which of the following best describes the type of job the head of the family held. (Circle only one number.)

(21)
1 Unemployed
2 Unskilled...no formal training needed.
3 Semi-skilled...some formal training needed.
4 Skilled...some formal training or experience required.
5 Managerial...considerable experience or schooling needed.
6 Professional...four-year college training needed.

B. Generally, which one of the following best describes your family's financial situation? (Circle only one number.)

(22)
1 Poor--it's a struggle just to make ends meet.
2 Rocky--sometimes we have enough, sometimes we don't.
3 Adequate--we have the necessities but must be careful.
4 Comfortably well off--we can afford most things.
5 Very well off--some would say rich or affluent.

C. Assuming you were trying to make a serious decision now, how likely is it you would ask the help of: (Circle one number for each person.)

(23-25)

	Father	Mother	Other
Never	1	1	1
Not very likely	2	2	2
Depends; sometimes I do, sometimes I don't	3	3	3
Likely	4	4	4
Very Likely	5	5	5

D. How much do you worry about: (Circle only one number for each description.)

		Very little			Very much
(26)	Finances and debts	1	2	3	4
(27)	Love life	1	2	3	4
(28)	Marriage	1	2	3	4
(29)	Getting drafted	1	2	3	4
(30)	Generation gap	1	2	3	4
(31)	Racial tensions	1	2	3	4
(32)	Succeeding in college	1	2	3	4
(33)	Religion	1	2	3	4
(34)	Working while in college	1	2	3	4
(35)	Finding a job while in college	1	2	3	4
(36)	Conflict between parents	1	2	3	4
(37)	Finishing college	1	2	3	4
(38)	Making it	1	2	3	4
(39)	The establishment	1	2	3	4
(40)	International problems	1	2	3	4
(41)	Making my car payments	1	2	3	4

E. How would you say the adults in the home where you grew up generally thought of your achievements? (Circle one number for each person.)

	Father	Mother	
	1	1	In a belittling manner
(42-43)	2	2	Never satisfied
	3	3	Indifferently
	4	4	Sometimes good, sometimes bad
	5	5	Always ready with praise

F. Which of the following phrases are most descriptive of you in the past? (Circle one number for each phrase.)

	Yes	No	
(44)	1	2	In conflict and rebellion against parent(s)
(45)	1	2	Opposed to almost all authority
(46)	1	2	Out for a good time
(47)	1	2	Relatively happy and content
(48)	1	2	Got along well with others my own age
(49)	1	2	Unhappy and alone most of the time
(50)	1	2	Independent in my thoughts and actions
(51)	1	2	Better than average student
(52)	1	2	Average student
(53)	1	2	Below average student

G. What is your reason for coming to college? (Circle the most appropriate number.)

(54)
1 I haven't really decided yet
2 Just to take interesting courses
3 To complete one of the technical/vocational programs
4 To get a junior college degree only
5 To get a junior college degree and complete a technical program
6 To prepare for transfer to another college (with or without a junior college degree)

H. What job do you expect to be in eventually? ______________________________

How certain are you that you will eventually enter this job? (Circle the appropriate number.)

(55) 1 Very certain 2 Fairly certain 3 A little doubtful 4 Very uncertain

I. How important do you feel it was to the following people that you go to college? (Circle one number for each person.)

		Very unimportant			Very important
(56)	Father	1	2	3	4
(57)	Mother	1	2	3	4
(58)	Friend	1	2	3	4
(59)	Teacher	1	2	3	4
(60)	Other	1	2	3	4

J. How important was each of the following reasons in reaching your decision to attend this college? (Circle one number for each reason.)

		Very unimportant			Very important
(61)	Talked into it	1	2	3	4
(62)	Parents wanted it	1	2	3	4
(63)	Best friends came here	1	2	3	4
(64)	Special program available	1	2	3	4
(65)	Received a scholarship	1	2	3	4
(66)	Low cost	1	2	3	4
(67)	Could still live at home	1	2	3	4
(68)	Could be in sports	1	2	3	4
(69)	Felt unprepared for senior college	1	2	3	4
(70)	Couldn't qualify for state college	1	2	3	4
(71)	Wasn't sure what I wanted to do	1	2	3	4
(72)	Didn't want to enter military service now	1	2	3	4
(73)	Couldn't qualify for the university	1	2	3	4

K. Generally, how important do you feel a college education is for each of the following?

		Very unimportant			Very important
(74)	For men	1	2	3	4
(75)	For women	1	2	3	4
(76)	For me personally	1	2	3	4

L. If you had to choose between making grades or engaging in each of the activities listed below, which would you choose? (Circle one number for each activity.)

	Making Grades	or	Activity Listed	
(77)	1		2	Participating in clubs, teams, etc.
(78)	1		2	Having as many dates as I want
(79)	1		2	Partying (socializing)
(80)	1		2	Expressing my own true feelings or ideas, even when they contradict the instructor's
(13)	1		2	Participating in music, drama, speech, debate, etc.
(14)	1		2	Participating in church or religious activities
(15)	1		2	Participating in student government and/or outside political activities

M. How would you describe the temperament of the adults in the home where you grew up? (Circle as many as apply to each parent.)

		Father	Mother			Father	Mother			Father	Mother
(16)	Ambitious	1	2	(23)	Intellectual	1	2	(30)	Outgoing	1	2
(17)	Strict	1	2	(24)	Understanding	1	2	(31)	Kind	1	2
(18)	Quick tempered	1	2	(25)	Orderly	1	2	(32)	Nagging	1	2
(19)	Cautious	1	2	(26)	Indifferent	1	2	(33)	Loving	1	2
(20)	Excitable	1	2	(27)	Optimistic	1	2	(34)	Easy-going	1	2
(21)	Energetic	1	2	(28)	Worrier	1	2	(35)	Moody	1	2
(22)	Bossy	1	2	(29)	Successful	1	2				

The purpose of the check list below is to measure the different ideas people have about themselves. In responding, please make your judgments on the basis of how each word describes you.

If you feel the underlined word is very closely related to one end of the scale, you should circle a number towards that end of the scale.

If you think neither word really describes you or that you are somewhere in between, circle a number in the middle of the scale.

Be sure to place one—and ONLY one—circle on each scale for every pair of words. Please work rapidly; first impressions are important here.

Thank you for your cooperation.

ME

MYSELF AS I REALLY AM

(36)	Weak	1	2	3	4	5	6	7	Strong
(37)	Passive	1	2	3	4	5	6	7	Active
(38)	Ugly	1	2	3	4	5	6	7	Beautiful
(39)	Unstable	1	2	3	4	5	6	7	Stable
(40)	Simple	1	2	3	4	5	6	7	Complicated
(41)	Failure	1	2	3	4	5	6	7	Success
(42)	Insecure	1	2	3	4	5	6	7	Secure
(43)	Dependent	1	2	3	4	5	6	7	Independent
(44)	Boring	1	2	3	4	5	6	7	Interesting
(45)	Worthless	1	2	3	4	5	6	7	Valuable
(46)	Rigid	1	2	3	4	5	6	7	Flexible
(47)	Lack of hope	1	2	3	4	5	6	7	Hope
(48)	Now	1	2	3	4	5	6	7	The future
(49)	Doing	1	2	3	4	5	6	7	Thinking
(50)	No rules	1	2	3	4	5	6	7	Rules
(51)	Unlucky	1	2	3	4	5	6	7	Lucky
(52)	Disorganized	1	2	3	4	5	6	7	Planning
(53)	Fun	1	2	3	4	5	6	7	Work
(54)	Not able	1	2	3	4	5	6	7	Able
(55)	Why bother?	1	2	3	4	5	6	7	Try

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                  NORTHERN CALIFORNIA JUNIOR COLLEGE COOPERATIVE STU

SEX

                  MALE                              15336
                  FEMALE                            12044
RACE

                  CAUCASIAN                         21455
                  NEGRO                              1805
                  ORIENTAL                           1671
                  SPANISH SURNAME                    1120
                  OTHERS                              927
MARITAL STATUS

                  SINGLE                            24586
                  MARRIED                            2327
                  DIVORCED                            402
IF EMPLOYED, WILL YOU KEEP YOUR JOB WHILE ATTENDING COLLEGE

                  YES                               11796
                  NO                                 4011
                  NOT EMPLOYED                      10304
IF EMPLOYED, IS YOUR JOB RELATED TO YOUR STUDY FIELD

                  YES                                2840
                  NO                                12136
                  NOT EMPLOYED                      10035
WHERE DO YOU LIVE

                  WITH PARENTS                      21791
                  WITH FRIENDS                       1799
                  ALONE                              1139
                  WITH WIFE                          2227
TRANSPORTATION TO COLLEGE

                  OWN CAR                           13858
                  PARENTS CAR                        3985
                  FRIENDS CAR                        2350
                  PUBLIC TRANS                       3818
                  OTHERS                             1420
NEED OF FINANCIAL ASSISTANCE

                  YES                                4429
                  NO                                21580
TYPE OF JOB HELD BY HEAD OF HOUSEHOLD IN WHICH YOU GREW UP

                  UNEMPLOYED                          319
                  UNSKILLED                          2681
                  SEMI-SKILLED                       4400
                  SKILLED                            9611
                  MANAGERIAL                         5298
                  PROFESSIONAL                       4445
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NORTHERN CALIFORNIA JUNIOR COLLEGE COOPERATIVE STUDY

FAMILY FINANCIAL CONDITION

POOR	618
ROCKY	1339
ADEQUATE	11169
COMFORTABLE	12610
WELL OFF	603

HELP WITH DECISION MAKING

	NEVER	NOT LIKELY	DEPENDS	LIKELY	VERY LIKEL
	5631	16712	60541	[illegible]	60325
FATHER	2350	3010	6863	4303	6185
MOTHER	1435	2549	6899	5239	7271
OTHERS	1846	2797	6426	3695	4505

HOW MUCH DO YOU WORRY ABOUT,

	VERY LITTLE	A LITTLE	ALOT	VERY MUCH
FINANCES	7787	8864	6366	3342
LOVE LIFE	9969	8826	5116	2401
MARRIAGE	16631	5413	2417	1416
DRAFT	15896	2871	2609	3452
GENERATION GAP	15439	6384	2712	1308
RACIAL TENSION	8568	7226	5977	4233
SUCCEEDING IN SCHOOL	2271	3810	7640	12551
RELIGION	11887	6965	4513	2731
WORKING IN SCHOOL	7514	7670	6664	4423
FINDING A JOB	12209	5812	4416	3537
CONFLICTS IN HOME	15002	5319	3202	2401
FINISHING COLLEGE	4718	4728	6092	10685
MAKING IT	5718	4851	5771	9468
THE ESTABLISHMENT	11187	7392	4548	2335
INTERNATIONAL PROB.	7412	8553	6778	3006
CAR PAYMENTS	19677	2580	1652	1511
	171435	[illegible]	224919	275248

HOW DID FATHER VIEW YOUR ACHIEVEMENTS

IN A BELITTLING MANNER	579
NEVER SATISFIED	1570
INDIFFERENTLY	2372
SOMETIMES GOOD SOMETIMES BAD	12747
ALWAYS READY WITH PRAISE	7246

HOW DID MOTHER VIEW YOUR ACHIEVEMENTS

IN A BELITTLING MANNER	332
NEVER SATISFIED	1301
INDIFFERENTLY	1412
SOMETIMES GOOD SOMETIMES BAD	13239
ALWAYS READY WITH PRAISE	9221

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NORTHERN CALIFORNIA JUNIOR COLLEGE COOPERATIVE STUDY                    0

IN THE PAST---HOW DID YOU ACT---DID YOU---
REBELLED AGAINST PARENTS

          YES              5106
          NO              20653

OPPOSED AUTHORITY

          YES              2265
          NO              23503

OUT FOR A GOOD TIME

          YES             12898
          NO              12683

HAPPY MOST OF THE TIME

          YES             22804
          NO               3192

GET ALONG WITH OTHERS YOUR AGE

          YES             23754
          NO               2171

UNHAPPY AND ALONE

          YES              2056
          NO              23547

INDEPENTENT

          YES             19120
          NO               6475

BETTER THAN AVERAGE IN STUDENT

          YES              8688
          NO              16794

AVERAGE STUDENT

          YES             17573
          NO               8061

BELOW AVERAGE STUDENT

          YES              1765
          NO              23084

WHAT IS YOUR REASON FOR COMING TO COLLEGE

          HAVE NOT REALLY DECIDED                        1996
          TO TAKE INTERESTING COURSES                     938
          FOR TECH/VOCATIONAL PROGRAM                    3095
          A.A. DEGREE                                    1599
          A.A. DEGREE AND TECH.PROGRAM                   3235
          PREPARE FOR TRANSFER                          15937

EXPECTATION OF GETTING A GOOD JOB

                 VERY CERTAIN        FAIRLY         DOUBTFUL        VERY   SURE

                    5696             11677            3944          1774
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NORTHERN CALIFORNIA JUNIOR COLLEGE COOPERATIVE STUDY

IMPORTANCE OF YOUR GOING TO COLLEGE TO

	NOT VERY	SOME	QUITE	VERY
FATHER	.2760	2662	5127	15007
MOTHER	2320	2130	5408	16362
FRIENDS	4273	5893	7506	7186
TEACHERS	4452	4030	5922	9863
OTHERS	5288	3899	5265	7388

RATING OF REASONS IN MAKING DECISION TO GO TO COLLEGE

	VERY IMPORTANT	IMP.	QUITE IMP.	IM
TALKED INTO IT	17415	4609	2197	152
PARENTS WANTED IT	8158	5840	5839	60
BEST FRIEND HERE	17047	5023	2450	114
SPECIAL PROGRAM	12975	4568	3732	443
SCHOLARSHIP	21443	1861	894	9
LOW COST	8312	4729	6053	651
COULD LIVE AT HOME	9993	3829	5449	64
COULD BE IN SPORTS	19220	2900	1661	153
UNPREPARED FOR 4YR.	9925	4281	5413	5911
NOT QUAL. FOR 4YR.	12939	3892	3461	49
UNSURE	11982	4406	4551	45
DRAFT	16657	2071	2284	371
NOT QUAL. FOR UNIV.	13583	3292	2966	552

RATING OF THE IMPORTANCE OF COLLEGE FOR

	NOT VERY	SOME	QUITE	VERY IMPORTANT
MEN	1081	355	2346	22584
WOMEN	1192	5553	11527	8081
YOURSELF	1035	1032	5326	18856

RATE MAKING GRADES TO ACTIVITIES LISTED

	ACT.	GRADES
CLUBS TEAMS	21522	4186
DATES	20418	4675
PARTYING	18562	6538
EXPRESSING IDEAS	10868	14097
MUSIC-DRAMA	20531	4650
RELIGIOUS ACTIVITY	19756	5237
POLITICS	21093	4169

	FATHER	MOTHER	BOTH
AMBITIOUS	6652	4237	7149
STRICT	6313	3638	3673
QUICK TEMPERED	7608	4811	1567
CAUTIOUS	4703	7074	5133
EXCITABLE	3384	8876	2514
ENERGETIC	4924	5425	5357
BOSSY	4060	4678	1161
INTELLECTUAL	5981	3684	4506
UNDERSTANDING	3511	9388	9903
ORDERLY	4378	5870	6104
INDIFFERENT	3978	2198	973
OPTIMISTIC	3807	4201	3418
WORRIER	2937	11604	2876
SUCCESSFUL	7482	1886	7145
OUTGOING	5134	5200	4711
KIND	2817	6419	11793
NAGGING	2373	7128	1650
LOVING	1278	6329	12397
EASY-GOING	6786	4627	5398
MOODY	5124	5177	2387

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NORTHERN CALIFORNIA JUNIOR COLLEGE COOPERATIVE STUDY

EVALUATION OF YOURSELF FROM ONE EXTREME TO THE OTHER
                         1       2       3        4       5       6       7

WEAK                   307     488    1771     7198    7155    6226    3177    STONG
PASSIVE                423     848    2283     6430    5875    5958    4145    ACTIVE
UGLY                   399     558    1816    10968    7923    3014    1011    BEAUTIFUL
UNSTABLE               567     802    2022     5137    5953    6938    4396    STABLE
SIMPLE                1086    1259    2772     7392    6133    4560    2895    COMPLEX
FAILURE                425     478    1166     6997    8330    6467    2183    SUCCESS
INSECURE               747    1073    2483     5328    5785    6437    4217    SECURE
DEPENTENT              767     883    1513     4856    5210    5917    5768    INDEPENT
BORING                 365     490    1412     6720    8149    6281    2757    INTEREST.
WORTHLESS              406     312     823     6011    8196    6971    3470    HELPFUL
RIGID                  359     427    1083     4961    6695    7626    4833    FLEXIBLE
LACK OF HOPE           348     275     672     3062    5122    8156    8473    HOPEFUL
NOW                   1190     809    1197     5155    5147    5993    6409    LATER
DOING                 1187    1173    1946     6912    5926    5356    3426    THINKING
NO RULES               696     801    1512     5679    6541    6731    3971    RULES
UNLUCKY                896     840    1961     8657    6548    4406    2796    LUCKY
DISORGANIZED           697     877    2045     5141    6431    5717    4163    ORGANIZE
FUN                   1347    1330    2826     9812    5251    3199    2301    WORK
NOT ABLE               164     147     447     3885    6559    9222    5698    ABLE
WHY BOTHER             289     169     386     2345    4239    8301   10394    TRY
                     12665   28075   97188   494624  636655  753336  605458
  TOTAL NUMBER OF QUESTIONS WITH NO RESPONSE

                                                                  2623014
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Mean Values

	Number	Decision Making	Worry	Goal Transfer %	 Tech/Voc %	Parental Encouragement	Importance to Self	Self Concept
A	3018	7.17	31.49	57.91	28.92	6.03	3.48	94.63
C	691	8.47	31.18	54.41	28.50	6.35	3.44	95.10
D	1694	8.53	32.55	55.02	32.59	6.21	3.49	95.53
E	2586	7.98	31.48	57.81	31.09	6.26	3.56	94.02
F	1873	8.40	31.47	58.25	28.24	6.29	3.41	94.59
G	1229	7.99	33.64	58.99	30.75	6.69	3.63	97.86
I	843	7.79	31.45	54.45	28.83	5.95	3.46	91.13
J	1434	8.70	32.99	61.99	24.34	6.38	3.51	94.66
K	3092	8.76	31.07	64.84	24.13	6.32	3.51	97.87
L	846	8.85	33.24	66.43	16.31	6.31	3.47	93.92
M	1130	7.50	26.77	38.85	37.69	5.26	3.07	85.29
N	629	8.45	32.69	51.66	32.43	6.63	3.59	98.50
O	1600	7.27	30.28	62.81	25.88	6.10	3.50	94.74
P	829	8.41	31.05	57.90	26.90	6.36	3.50	94.43
Q	766	8.22	31.49	56.78	23.76	5.75	3.16	94.46
R	483	7.65	31.98	53.21	24.64	5.68	3.24	92.90

S	389	8.53	32.46	54.19	34.19	6.52	3.59	95.66
T	1332	8.25	32.93	54.12	35.36	6.40	3.15	92.88
V	1570	7.81	31.66	59.55	29.17	6.18	3.56	98.03
W	1103	7.96	27.18	46.14	29.37	7.83	3.24	85.37
X	626	7.42	29.69	54.79	26.52	5.98	3.35	86.65
Total	27380	8.26	31.81	58.20	28.95	6.27	3.45	95.80

Appendix V

NORTHERN CALIFORNIA COOPERATIVE RESEARCH

Participating Colleges

1.	American River College Dick Parker 4700 College Oak Drive Sacramento, California 95841	484-8211 (916)
2.	Butte College Barry Curran 2060 Third Street Durham, California 95965	345-2481 (916)
3.	Cabrillo College Malby Roberts 6500 Soquel Drive Aptos, California 95003	475-6000 (408)
4.	Chabot College Don Kester 2555 Hesperian Blvd. Hayward, California 94545	782-3000 (415)
5.	City College of San Francisco E. Lance Rogers 50 Phelan Avenue San Francisco, California 94112	587-7272 (415)
6.	College of San Mateo Frank Pearce 1700 West Hillsdale Blvd. San Mateo, California 94402	341-6161 (415)
7.	College of the Sequoias Lincoln Hall Mooney Blvd. Visalia, California 93277	732-4711 (209)
8.	Contra Costa College Russell Stillwell 2600 Mission Bell Drive San Pablo, California 94806	235-7800 (415)
9.	DeAnza College Lee Stevens Stevens Creek Blvd. at Stelling Rd. Cupertino, California 95014	257-5550 (408)

10. Diablo Valley College 685-1230 (415)
Martin Olavarri
Golf Links Road
Concord, California 94609

11. Foothill College 948-8590 (415)
Lee Stevens
12345 El Monte Road
Los Altos Hills, California 94022

12. Laney College 834-5740 (415)
Jeanette Golds
1001 Third Avenue
Oakland, California 94606

13. Merced College 723-4321 (209)
Loren Irwin
Merced, California 95340

14. Merritt College 655-6110 (415)
Catherine Farley
5714 Grove Street
Oakland, California 94609

15. Monterey Penninsula College 375-9821 (408)
Sharon Conniglio
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